



**WORK PLAN FOR PCB/WORKER ISOLATION by
VAPOR BARRIER INSTALLATION**

in connection with the

Freight Elevator
Urbauer Hall
St. Louis, Missouri 63105

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TABLE OF CONTENTS

1	EXECUTIVE SUMMARY, INTRODUCTION, AND CERTIFICAITON.....	2
2	SITE DESCRIPTION.....	4
3	DESCRIPTION OF PCB “CLEANUP SITE”	18
4	PROPOSED RISK-BASED PCB CLEANUP LEVELS	19
5	SITE CHARACTERIZATION AND DATA GAPS.....	20
6	APPLICATION AND CLEANUP PLAN.....	22
7	DECONTAMINATION OF TOOLS, EQUIPMENT, AND MOVABLE EQUIPMENT.....	26
8	WASTE DISPOSAL – PCB REMEDIATION WASTE AND CLEANUP WASTES	27
9	PCB CLEANUP REPORT	28
10	LAND USE RESTRICTIONS	29

LIST OF APPENDICES

APPENDIX A:	Tool 1 and Tool 2
APPENDIX B:	Health and Safety Plan
APPENDIX C:	Notification of PCB Activity – EPA Form 710-53
APPENDIX D:	Manufacturer-Supplied Information, Aquafin SG-2
APPENDIX E:	Manufacturer-Supplied Information, Stego Drago Wrap and Sealant





1 EXECUTIVE SUMMARY, INTRODUCTION, AND CERTIFICATION

The site name is: Urbauer Hall

The site address is: Washington University in St. Louis – Danforth Campus
Urbauer Hall is located just South of Throop Drive and to the Southeast of the Power Plant

Owner and/or Operator Name: Washington University in St. Louis

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See Tool 1: Initial Discussion with Responsible Party Checklist located in Appendix A for more information.

Brief Summary of PCB Impacts:

In 2002, the elevators at Washington University were load-tested, and the cylinders on two elevators failed. When the two elevator cylinders were replaced, the spilled hydraulic fluid, and sand and soil contaminated with hydraulic fluid were remediated as an oil spill. When the hydraulic fluid and contaminated sand and soil were tested for disposal, it was discovered that polychlorinated biphenyls (PCBs) were present in the seven drums of waste generated from Urbauer Hall at concentrations between approximately 0.5% to 11%. The amount of PCBs in the waste generated was calculated to be a maximum of 210 pounds or 18 gallons.

Not all the fluid in Urbauer's elevator tank was changed when its cylinder was changed. The fluid remaining in the elevator tank did not contain PCBs (level of detection at 1.53 mg/kg).

When Washington University was notified by the disposal company that PCBs were present in the Urbauer Hall waste drums, the incident was reported to the MDNR Spill Response Center on December 23, 2002, and assigned a case number of 021223-1326-ADC. In addition, on January 02, 2003, the incident was also reported to the



National Response Center and assigned a case number of 633199-WARD. This report was also reported to the EPA.

Soils below the elevator pit, in addition to the concrete of the elevator pit appear to be impacted.

Brief description of proposed cleanup option:

Based on the impacted areas being in the elevator pit generally under or within the existing concrete floor, the remedial approach selected by Washington University will be to install an impervious cover to the floor of the elevator shaft. This cover will be a combination of two vapor intrusion barriers effectively sealing off exposure pathways and preventing PCBs from contacting persons working in the elevator pit or entering the breathing zone of on-site occupants. This isolation of the contaminants from the workers is being proposed based on the infrequent occurrence of workers entering this area and the special entry procedures required to work in the elevator pit.

PSI proposes to start the field activities in ten to fifteen business days after written authorization to proceed has been received. PSI understands that the authorization is contingent upon Washington University approval, EPA approval and availability of subcontractors. Mobilization, set-up activities and site preparation, measurements and staging are anticipated to take approximately one business day. Installation of the waterproofing coating is expected to take two business days; and application and installation of the vapor barrier is also expected to take two business days. This could be extended due to curing and dry times. PSI will perform inspection and testing of the barrier and take confirmation samples once the installation is complete. In all, we are anticipating one business week of field activities.

PSI proposes to deliver the draft installation documentation report to Washington University within fifteen business days after the completion of the project and the results of the air monitoring have been received. Based upon review and comments, PSI proposes submitting the report and the appropriate Tool from the EPA PCB FAST to the EPA approximately five business days after receipt of Washington University comments.

Certification from Owner and Party conducting the cleanup:

Washington University in St. Louis (Owner) and the party conducting the cleanup will provide a written certification that all sampling plans, sample collection procedures, sample preparation procedures, extraction procedures, and instrumental/chemical analysis procedures used to assess or characterize the PCB contamination at the Urbauer Hall Elevator Pit site, will be on file at Washington University's Environmental Health and Safety Department, and are available for EPA inspection.



2 SITE DESCRIPTION

Surrounding land uses:

Urbauer Hall is currently surrounded by college-level educational facilities to the south, east and west and by a street (Throop Drive) to the north.

Current and proposed or planned future land uses:

There are currently no plans to demolish or change this facility for its intended use as a college-level educational facility.

Onsite Buildings:

The current Building is Urbauer Hall, which is a college-level educational facility. Urbauer Hall was, constructed in the 1960s, and consists of 4 levels totaling 64,145 square feet (sf):

- Lower (basement) level: 17,095 sf;
- First Floor: 14,906 sf;
- Second Floor: 15,719 sf; and
- Third Floor: 16,425 sf.

Sources of PCBs and historic operations:

Information provided to Washington University by Burns & McDonnell in a July 2003 report.

“Two liquid samples of the hydraulic system fluids, one liquid sample from the elevator pit sump, three boring samples of the concrete in the elevator pit, ten wipe samples of the concrete and tile floors in the area around the elevator outside the pit, and two wipe samples of the steel supports in the pit were taken. All the results of the 12 wipe tests of the Urbauer system are below the cleanup standard in 40 CFR 761.125(c)(4)(ii) of 10 ug/100cm² for nonrestricted access areas. The only contamination found that remains above the cleanup levels referenced in 40 CFR 761.125(c)(4), is the concrete in front of the cylinder supports (looking from the elevator door). The PCB concentration found in the concrete behind the cylinder steel supports was below 4 mg/kg (ppm), which is below the 10 ppm clean up level for soil in nonrestricted areas.”

“The PCBs found in the concrete in front of the cylinder steel supports varied from 46 to 147 ppm. Since this is above the 10 ppm clean up level for soil in nonrestricted areas found in 40 CFR 761.125(c)(4)(v), action must be taken to address this issue. Although the elevator pit does not meet the definition of a restricted access area found in 40 CFR 761.123, the pit is closer to a restricted access area than a nonrestricted area. The only personnel entering the pit have been Long Elevator to work on the cylinder, and Heritage Environmental or Wellington Environmental to perform testing or cleanup services. Elevator pits are dangerous places and should not be entered without careful considerations of the dangers and proper lockout procedures. The area cannot be entered without overriding the safety lockout on the door.”



“...it was concluded that the PCB contamination came from Urbauer Hall. Its elevator hydraulic system and surrounding area were sampled on January 6, 2003. Two liquid samples of the hydraulic system fluids, one liquid sample from the elevator pit sump, three boring samples of the concrete in the elevator pit, and ten wipe samples of the concrete and tile floors in the area around the elevator outside the pit were taken. No PCBs were found in the hydraulic system. All ten wipe tests were under the cleanup standard in 40 CFR 761.125(b)(4)(ii) of 10 ug/100cm² for nonrestricted access areas. The only concerns were the PCBs found on the elevator pit's concrete floor and in the sump. The PCB concentration in the sump liquid was 2,986 ppm. The concentration on the concrete varied from 3 to 147 ppm, which calculates to a magnitude of 0.3 pound of PCBs.”

“The liquid in Urbauer Hall's elevator pit sump was removed on March 4, 2003, and two wipe samples of the steel supporting the cylinder were taken. ALL the wipe samples were under the cleanup standard in 40 CFR 761.125(c)(4)(ii) of 10 ug/100cm² for nonrestricted access areas.”

Current site environmental conditions including extent of PCB contamination on site:

Information provided to Washington University by Environmental Science Consulting, LLC (ESC, LLC) of Fenton, Missouri.

On October 16, 2018, ESC, LLC collected PCB wipe samples from the elevator pit floor. In addition, they collected a sample of the sump water.

Three surface wipe samples were collected on the concrete floor using EPA PCB Wipe Test methodology as specified in 40 Code of Federal Regulations Part D Section 123 (40 CFR D § 761.123). The samples were transported under chain-of-custody to EMSL Analytical, Inc. (EMSL) for analysis by EPA Method 35550C/8082A.

On the following page is a photograph showing the locations of the wipe sample collection locations.



The results of the analysis of the wipe samples, showing the PCBs detected, are summarized in the following table.

TABLE 1: SUMMARY OF WIPE SAMPLING ON OCTOBER 16, 2018			
Sample Designation	Results (µg/100cm²)	Specific Aroclor Detected	Action Level
E.A.	27	Aroclor 1242	10
E.B.	77	Aroclor 1242	
	7	Aroclor 1260	
E.C.	24	Aroclor 1242	
NOTE: Action Level per 40 CFR 61 action criteria for dust (wipe) samples			

Water samples were collected from the sump in the elevator pit, submitted under chain-of-custody to EMSL for analysis for PCBs per Method 608.3.

On the next page is a photograph of the sump where the sample was collected.



The results of the analysis of the water sample, showing the PCBs detected, are summarized in the following table.

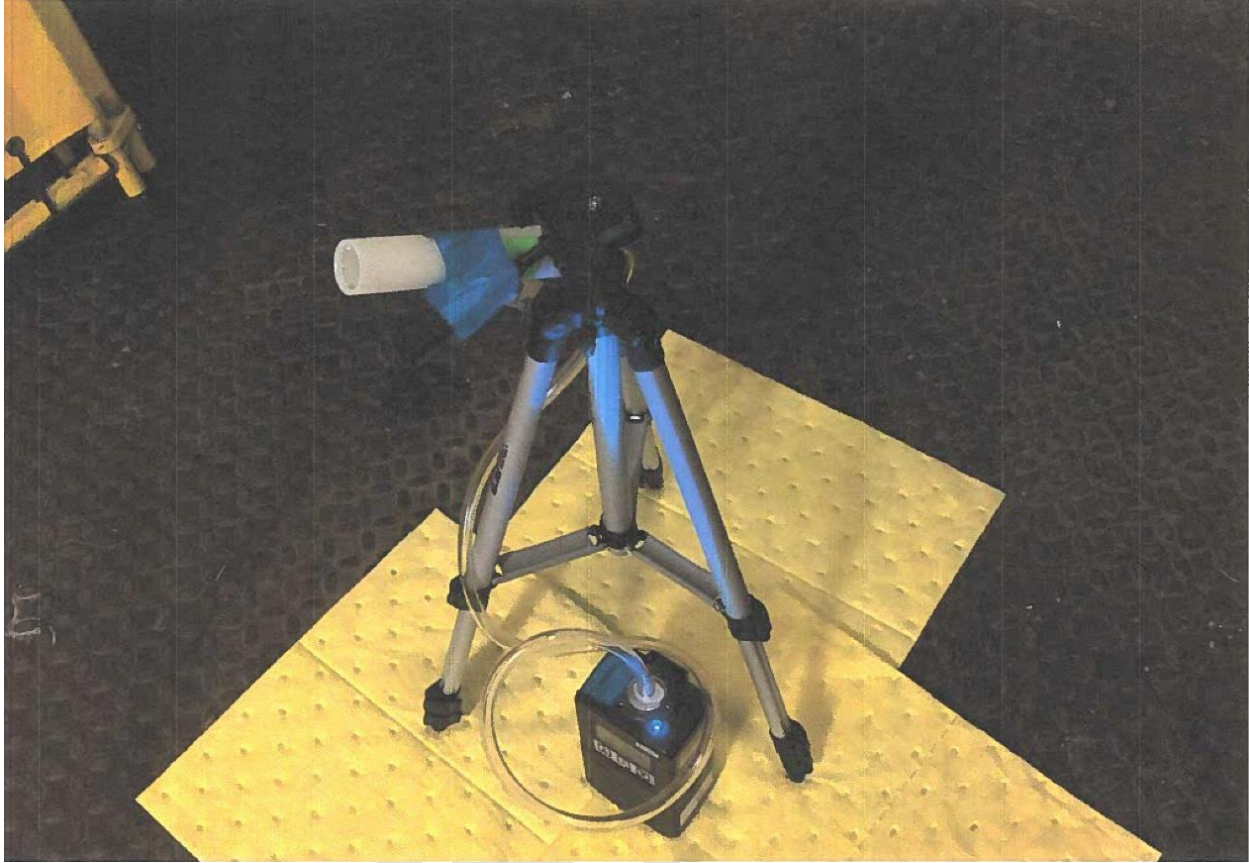
TABLE 2: SUMMARY OF WATER SAMPLING ON OCTOBER 16, 2018			
Sample Designation	Results (µg/L)	Specific Aroclor Detected	Action Level
E. Sump	11	Aroclor 1242	50,000
	1	Aroclor 1260	
NOTE: Action Level per 40 CFR 61 action criteria for liquids of 50 mg/L which is equivalent to 50,000 µg/L			

Elevator CAB and PIT Air Sampling, December 1, 2018

On December 1, 2018, ESC, LLC, collected two 8-hour air samples for PCB analysis by EPA Compendium Method TO-10A. The two samples were collected concurrently.



The sample in the elevator cab, Urbauer F.1, was collected while the elevator was on the first floor with the elevator doors closed. Below is a photograph of the sampling setup.





Sample Urbauer F.2 was collected from the elevator pit. Below is a photograph of the location of the pit sample and sampling setup.



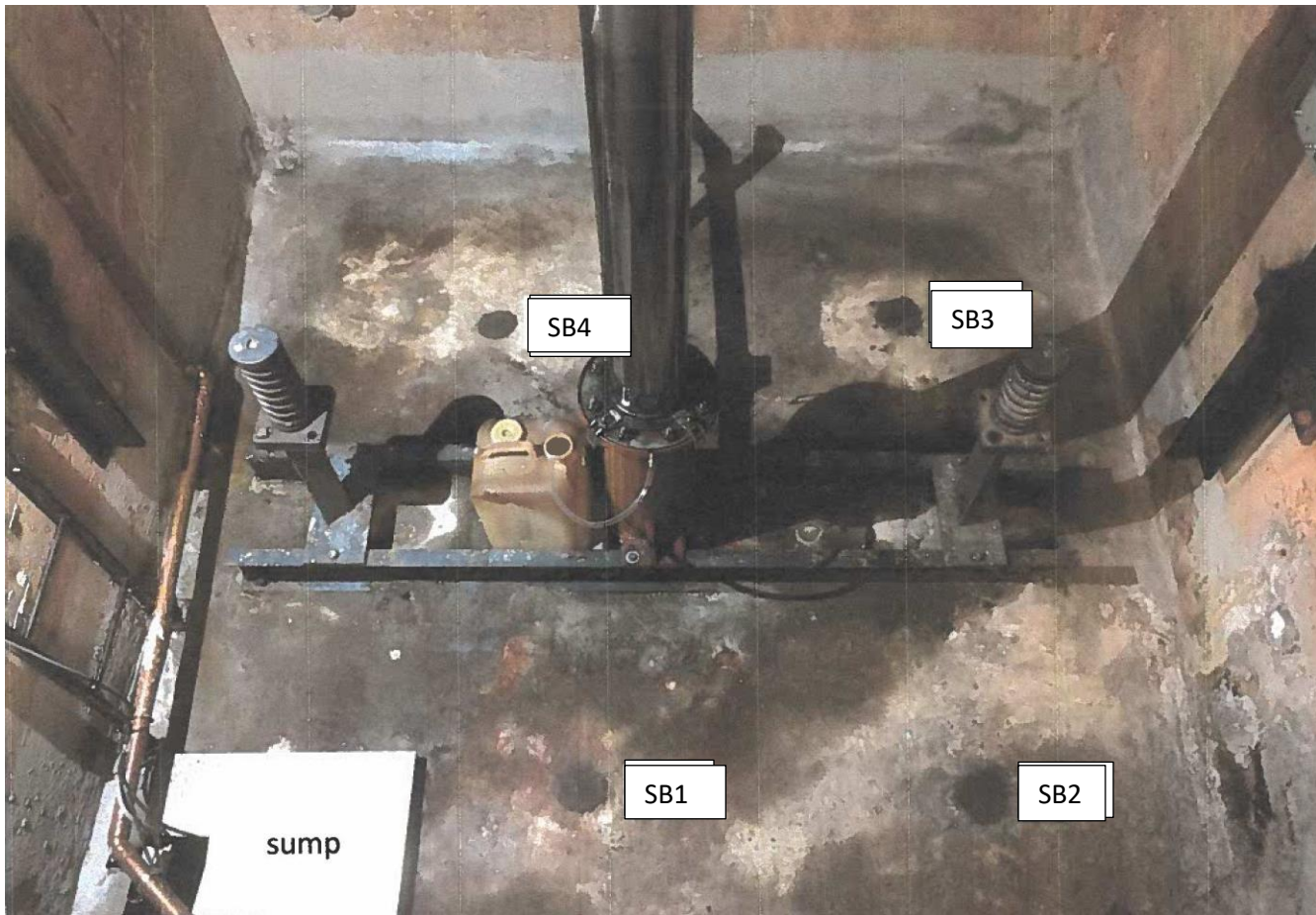
The results of the analysis of the air samples, showing the PCBs detected, are summarized in the following table.

TABLE 3: SUMMARY OF AIR SAMPLING ON DECEMBER 1, 2018			
Sample Designation	Results ($\mu\text{g}/\text{m}^3$)	Specific Aroclor Detected	Potential Action Level
Urbauer F.1	0.077	Aroclor 1016	0.500
Urbauer F.2	0.29	Aroclor 1016	0.500
NOTE: Potential Action Level per EPA Exposure Levels for Evaluation of PCBs in Indoor School Air of $500 \text{ ng}/\text{m}^3$, which is equivalent to $0.500 \mu\text{g}/\text{m}^3$ (adults)			

Elevator Pit Subsurface investigation, January 26-27, 2019

Between January 26, 2019, and January 27, 2019, ESC, LLC, collected four concrete core samples, ten soil (clay) samples, four sand samples, and one water sample from the elevator pit.

The cores were collected using standard concrete coring equipment and submitted under chain-of-custody to SGS for analysis of PCBs by Method 8082A. It should be noted that, prior to analysis, the laboratory crushed the concrete cores to meet the requirements of the analytical method. On the next page is a photograph of the sampling locations.



The results of the analysis of the concrete core samples, showing the PCBs detected, are summarized in the following table.

TABLE 4: SUMMARY OF CONCRETE CORE SAMPLE ANALYSIS IN JANUARY, 2019

Sample Designation	Results ($\mu\text{g}/\text{kg}$)	Specific Aroclor Detected	Action Level
SB1 Con. Core	39,100	Aroclor 1242	50,000
	1,070	Aroclor 1260	
SB2 Con. Core	17,100	Aroclor 1242	
	573	Aroclor 1260	
SB3 Con. Core	3,480	Aroclor 1242	
	116	Aroclor 1260	
SB4 Con. Core	1,490	Aroclor 1242	
	217	Aroclor 1254	

NOTE: Action Level per 40 CFR 61 action criteria for solids of 50 mg/kg which is equivalent to 50,000 $\mu\text{g}/\text{kg}$



After the core samples were collected, soil samples were collected from each of the sampling points and submitted under chain-of-custody to SGS for analysis for PCBs by Method 8082A. The results of the analysis of the soil samples, showing the PCBs detected, are summarized in the following table.

TABLE 5: SUMMARY OF SOIL SAMPLE ANALYSIS IN JANUARY, 2019					
Sample Designation	Matrix	Results (µg/kg)	Specific Aroclor Detected	Action Level	
SB1 3"-8"	Sand	409	Aroclor 1242	50,000	
		19.2 J	Aroclor 1260		
SB1 8"-13"	Clay	74.3	Aroclor 1242		
SB1 24"-30"	Clay	783	Aroclor 1242		
SB1 30"-34"	Clay	240	Aroclor 1242		
SB2 5"-7"	Sand	923	Aroclor 1242		
		35.1 J	Aroclor 1260		
SB2 16"-22"	Clay	103	Aroclor 1242		
SB2 30"-36"	Clay	264,000	Aroclor 1242		
		9,600	Aroclor 1260		
SB3 3"-8"	Sand	7,020	Aroclor 1242		
		174	Aroclor 1260		
SB3 14"-20"	Clay	431	Aroclor 1242		
SB3 28"-34"	Clay	141	Aroclor 1242		
SB4 4"-9"	Sand	249	Aroclor 1242		
		19.7 J	Aroclor 1260		
SB4 9"-14"	Clay	Not Detected	Not applicable		
SB4 20"-26"	Clay	49.6	Aroclor 1242		
SB4 30"-34"	Clay	89.4	Aroclor 1242		
NOTES: Action Level per 40 CFR 61 action criteria for solids of 50 mg/kg which is equivalent to 50,000 µg/kg					
J = detected at a concentration between the method detection limit and the reporting limit					

In addition, a water sample was collected from the SB4 sampling point, submitted under chain-of-custody to SGS for analysis by Methods 3510C/8082A. No PCBs were detected in the water sample.

Elevator Sump and Floor Oil Samples, March 1, 2019

On March 1, 2019, ESC, LLC, collected two liquid samples for PCB analysis by Methods 3580A/8082A.

The sump liquid sample, U.F. Oil 1, was collected from the sump in the photograph on the next page.



The results of the analysis of the sample collected from the sump, showing the PCBs detected, are summarized in the following table.

TABLE 6: SUMMARY OF SUMP LIQUID SAMPLING ON MARCH 1, 2019			
Sample Designation	Results (µg/kg)	Specific Aroclor Detected	Action Level
U.F. Oil 1	548,000	Aroclor 1242	50,000
NOTE: Action Level per 40 CFR 61 action criteria for liquids of 50 mg/L which is equivalent to 50,000 µg/L or µg/kg			

The second liquid sample was reported to be a mix of oil and water and was collected as a composite from the available liquid on the floor. On the next page is a photograph of the sampling methodology and approximate location.



The results of the analysis of the sample collected from the sump, showing the PCBs detected, are summarized in the following table.

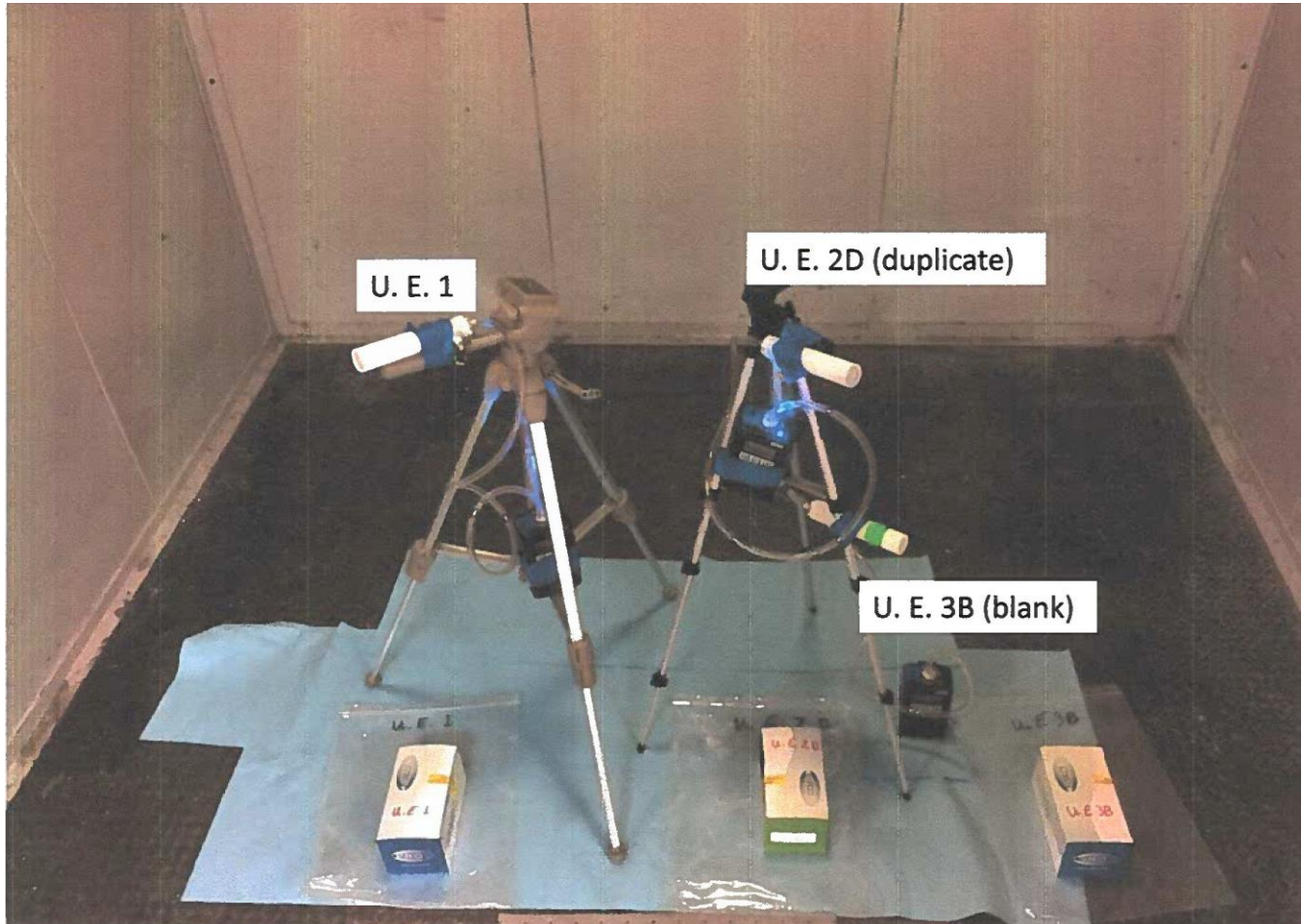
TABLE 7: SUMMARY OF FLOOR LIQUID SAMPLING ON MARCH 1, 2019			
Sample Designation	Results ($\mu\text{g}/\text{kg}$)	Specific Aroclor Detected	Action Level
U.F. Oil 2	102,000	Aroclor 1242	50,000
NOTE: Action Level per 40 CFR 61 action criteria for liquids of 50 mg/L which is equivalent to 50,000 $\mu\text{g}/\text{L}$ or $\mu\text{g}/\text{kg}$			

Elevator Cab and Hallway Air Sampling, March 28-29, 2019

On March 28, 2019, and March 29, 2019, ESC, LLC, collected seven air samples for PCB analysis by EPA Compendium Method TO-10A. The samples were collected concurrently. On the next pages are the photographs showing the sampling locations.



Samples collected in the freight elevator cab. The doors were reported to have been closed during the sample collection.

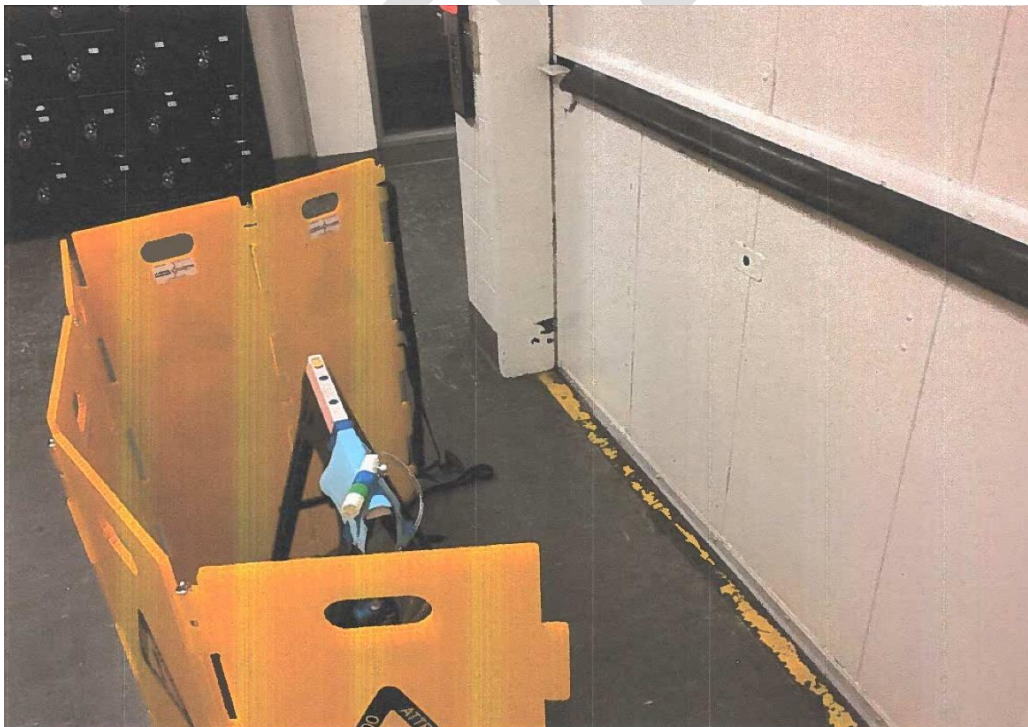




Sample collected on the first floor by the elevator (U.E. 4).



Sample collected in the basement hallway by the elevator (U.E. 5).

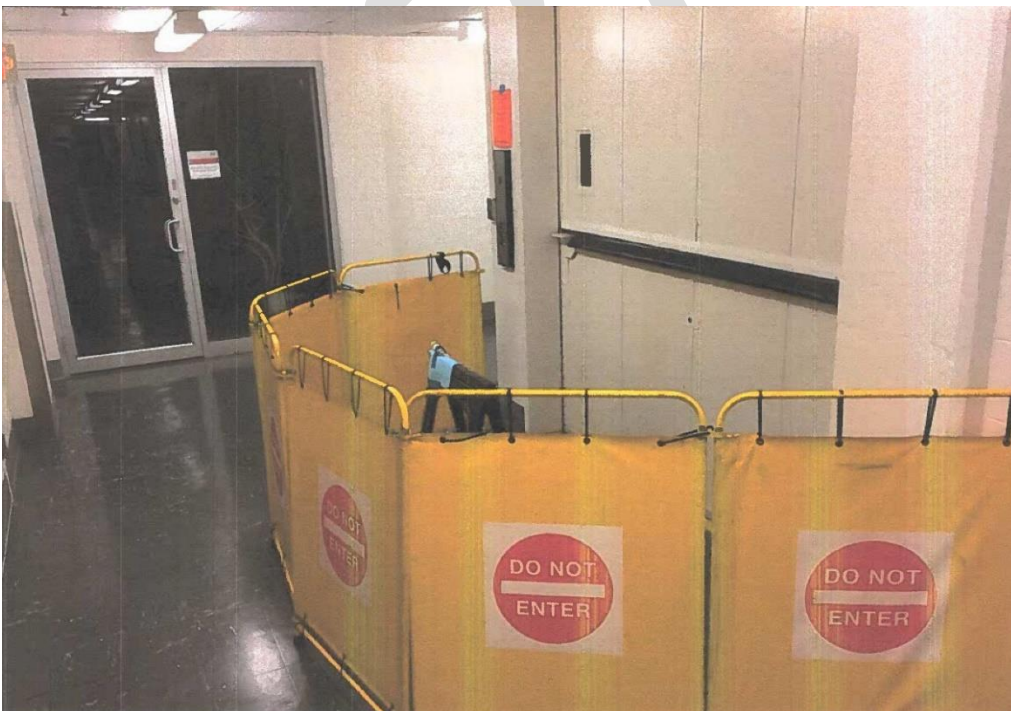




Sample collected on the second floor by the elevator (U.E. 6).



Sample collected on the third floor by the elevator (U.E. 7).





The results of the analysis of the air samples, showing the PCBs detected, are summarized in the following table.

TABLE 8: SUMMARY OF AIR SAMPLING ON MARCH 28-29, 2019				
Sample Designation	Sample Location	Results (µg/m³)	Specific Aroclor Detected	Potential Action Level
U.E. 1	Elevator Cab	0.085	Aroclor-1016	0.500
U.E. 2D		0.076	Aroclor-1016	
U.E. 3B		None Detected	Not Applicable	
U.E. 4	1 st Floor	None Detected	Not Applicable	
U.E. 5	Basement	0.15	Aroclor-1016	
U.E. 6	2 nd Floor	None Detected	Not Applicable	
U.E. 7	3 rd Floor	None Detected	Not Applicable	
NOTE: Potential Action Level per EPA Exposure Levels for Evaluation of PCBs in Indoor School Air of 500 ng/m³, which is equivalent to 0.500 µg/m³ (adults)				

Elevator Pit Air Sampling, April 20, 2019

On April 20, 2019, PSI collected one air sample for PCB analysis by EPA Compendium Method TO-10A. PSI also concurrently collected a field blank. The sample was collected from the sump half of the elevator pit, generally centrally located in that portion of pit. The samples were submitted under chain-of-custody to EMSL for analysis.

The results of the analysis of the air sample and field blank, showing the PCBs detected, are summarized in the following table.

TABLE 9: SUMMARY OF AIR SAMPLING ON APRIL 20, 2019				
Sample Designation	Sample Location	Results (µg/m³)	Specific Aroclor Detected	Potential Action Level
WU-Urbauer-01	Elevator Pit	0.68	Aroclor-1016	0.500
WU-Urbauer-02	Field Blank	None Detected	Not Applicable	
NOTE: Potential Action Level per EPA Exposure Levels for Evaluation of PCBs in Indoor School Air of 500 ng/m³, which is equivalent to 0.500 µg/m³ (adults). The Potential Action Level is based on an 8 Hour TWA. It is not expected that any service or maintenance work to be performed in the elevator pit would approach the 8 hour time period. However, in an abundance of caution, Washington University has prohibited all entry into the elevator pit.				

Copies of the laboratory reports for these sampling activities are available upon request.



3 DESCRIPTION OF PCB “CLEANUP SITE”

The “Cleanup site” is the elevator pit located in a central area of Urbauer Hall. The elevator pit is approximately 8’x 8’ in size, contains a sump and is covered with a porous concrete pad. The bulk of the PCB contamination was removed and cleaned up in 2003 as listed in Section 2 – Site Description – Sources of PCBs and historic operations. Approximately seven (7) drums of hydraulic fluid and contaminated sand and soil were removed from the elevator pit upon the discovery of the leak. It is not known if there is sand or soil contamination under the slab of Urbauer Hall as there is no access to this area. Previous sampling events, as listed in Section 2 indicates that the concrete pad and the sand directly under the concrete pad contains PCB concentrations above the Action Level of 50,000 micrograms per kilogram. The groundwater was also sampled and the concentrations were well below the Action Level of 50,000 micrograms per liter. Sample results did indicate a presence of PCBs on the concrete surface of the elevator pit. It is believed that the hydrostatic water pressure under the building pushes water up through the contaminated soil layer, through porous concreted pad and allowed to settle on the top side of the elevator pit concrete pad.

PCB air sample results did not indicate airborne levels greater than the Potential Action Level of 0.500 micrograms per cubic meter of air in the samples collected in the elevator cab, the basement hall outside of the elevator doors, the first floor outside the elevator doors, the 2nd floor outside the elevator doors and the 3rd floor outside the elevator doors. Another PCB air sample was collected in the elevator pit itself and sample results indicate a slight elevation as compared to the Potential Action Level. Because of this and the presence of PCBs on the surface of the elevator pit concrete slab, access to this area of the elevator pit has been prohibited.

To help collect any water/oil mixture that is pushed up through the elevator concrete pit slab, there is a sump system located in the northwest corner of the pit that pumps water and some oil mixture into a contained and labeled 55-gallon drum for testing and disposal on a periodic basis. This drum is located behind locked doors immediately south of the elevator pit.



4 PROPOSED RISK-BASED PCB CLEANUP LEVELS

Based on the definition listed in 40 CFR 761.61, the elevator pit at Urbauer Hall is considered a low occupancy area. Because there has been known PCB levels on the concrete pad, we are proposing a cleanup level of <10 micrograms per 100 centimeters squared utilizing standard wipe test methods utilizing EPA Method 8082A. However, because we are installing a waterproofing membrane and vapor barrier over this concrete pad, the wipe testing will be performed on the exposed side of the vapor barrier to document that the cleanup level has been obtained.

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5 SITE CHARACTERIZATION AND DATA GAPS

Sampling and Analysis Plan:

Air sampling shall be performed at the following locations before the start of the installation work specified in this Work Plan.

- Location 1: Inside the freight elevator pit, with the freight elevator door closed;
- Location 2: Inside the freight elevator cab, with the freight elevator door closed;
- Location 3: Outside the freight elevator door on the basement level;
- Location 4: Outside the freight elevator door on the 1st floor;
- Location 5: Outside the freight elevator door on the 2nd floor; and
- Location 6: Outside the freight elevator door on the 3rd floor.

Air sampling shall be performed at the following locations each day the installation work specified in this Work Plan is performed:

- Location 1: Outside the freight elevator door on the basement level;
- Location 2: Inside the freight elevator cab, with the freight elevator door closed;
- Location 3: Outside the freight elevator door on the 1st floor;
- Location 4: Outside the freight elevator door on the 2nd floor; and
- Location 5: Outside the freight elevator door on the 3rd floor.

Air sampling shall be performed at the following locations after the installation work specified in this Work Plan has been completed:

- Location 1: Inside the freight elevator pit, with the freight elevator door closed;
- Location 2: Inside the freight elevator cab, with the freight elevator door closed;
- Location 3: Outside the freight elevator door on the basement level;
- Location 4: Outside the freight elevator door on the 1st floor;
- Location 5: Outside the freight elevator door on the 2nd floor; and
- Location 6: Outside the freight elevator door on the 3rd floor.



Each of the samples shall be collected using a sorbent tube with Polyurethane Foam (PUF) [SKC 226-92 or equivalent]. Sampling shall be performed using a vacuum pump calibrated to the following flow rates for the following durations:

- Air sampling prior to the start of the installation work: 5 liters per minute for a maximum of 300 minutes;
- Air sampling during the installation work: 1 liter per minute for the duration of the work during the day; and
- Air sampling after the installation work has been completed: 5 liters per minute for a maximum of 300 minutes.

In addition, each sampling event shall have one quality assurance/quality control (QA/QC) field blank collected and submitted for analysis.

The sorbent tube sample shall be analyzed using the current edition of the Compendium Method TO-10A, *Determination of Pesticides and Polychlorinated Biphenyls in Ambient Air Using Low Volume Polyurethane Foam (PUF) Sampling Followed by Gas Chromatographic/Multi-Detector Detection (GC/MD)* from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air (EPA 625/R-96-010b) at an appropriately American Industrial hygiene Association (AIHA) accredited laboratory. The results of the analysis shall be reported in nanograms per cubic meter (ng/m³).

A minimum of four (4) random PCB wipe samples, plus one quality assurance/quality control field blank, will be collected from within the elevator pit, above the waterproof membrane and vapor barrier, and submitted for analysis utilizing EPA Method 8082A.

Upon completion of the sampling events and as part of the final report prepared by PSI, the results will be presented in a table format with documentation showing where each sample was collected, along with the results and cleanup verification.

Vertical and horizontal extent of PCB contamination:

Please refer to Section 2 starting on Page 6.

Figures and tables:

Please refer to Section 2 starting on Page 6.

Identification and description of Data Gaps:

Although there are a number of years between occurrence of events regarding the PCBs and elevator pit at Urbauer Hall, no activities occurred between the years as listed in this Work Plan.



6 APPLICATION AND CLEANUP PLAN

Notification of PCB Activity Form:

Please see attached EPA Form 7710-53.

Description and evaluation of cleanup:

We have concluded, through field evaluation, that the potential PCB-contaminated soil is inaccessible due to its location beneath the concrete elevator pit slab or underneath the concrete slab of the lower level of Urbauer Hall. The removal of this potentially contaminated soil is not possible. There are currently no plans to demolish the structure, therefore, access to the soil under the building will not be afforded. Because of this potential of contamination, Washington University will note the possibility of PCB contamination on the real estate paperwork associated with Urbauer Hall. Because the potential PCB contamination is inaccessible, this work plan is intended to address potential occupant exposure, both airborne and through physical contact. The remedial approach selected will be to install an impervious cover to the floor of the elevator shaft. This cover will be a two-layer process. The first layer will be a waterproof membrane so as not to allow any oils/water to penetrate the elevator pit concrete pad. The second layer will be a vapor intrusion barrier effectively sealing off any exposure pathways and preventing PCBs from entering the breathing zone of on-site occupants. This double layer system will keep any workers that have to enter the elevator pit from coming into physical contact with the oil/water mixture as well as eliminate all exposure pathways. The sump pump will have a sealed cover over it and will only be accessed in emergency situations and by appropriately trained personnel wearing proper personal protective equipment.

Installation operations will be directed by a PSI field supervisor, and field personnel will be OSHA trained in accordance with 29 CFR 1910.120. Work will include, as needed, the site and surface preparation of the elevator shaft slab, flooring and surroundings. This will also include lay-out, measurements and set-up. The work will be performed in three phases including preparing the surface for installation of the system, application of the waterproofing coating to prevent product or water from coming in physical contact; and application of the vapor barrier on top of the waterproofing coating. Following installation of the system, smoke and leak tests, along with confirmation air sampling, will be performed to ensure validity of the system.

The specific scope of the installation of the waterproofing and vapor barrier is described below. Before proceeding, strict adherence to the Health and Safety Plan included in this document must be followed. This will include the proper personal protective equipment (PPE) and decontamination procedures necessary.

1) Site Preparation

- a) Place signage on the elevator doors for each floor indicating that the elevator is out of service and the dates anticipated.
- b) Place barrier tape and physical barriers around the elevator pit on the basement level to restrict access.
- c) Install negative pressure ventilation system for the work to be performed in the elevator pit, properly filtered and exhausted to the outside environment.
- d) Place a polyethylene drop cloth on the basement level immediately outside the elevator pit to be used as step-off area for decontamination procedures.
- e) Ensure elevator cab is locked out prior to entering the elevator pit.
- f) Install sufficient lighting, if necessary, to ensure a safe working environment.



- g) Don proper personal protective equipment and respiratory protection to enter into the elevator pit.

2) Elevator Pit Floor Preparation

- a) Ensure surface finished to not impair installed membrane. This will include a pressure-washing, or other clean and smoothing applications to adequately prepare the surface of the elevator flooring. Before pressure-washing and Citrus based degreasing agents to remove the oil are applied, the sump pump collection drum will be exchanged to contain these liquids for proper profiling and disposal.
- b) Concrete must be clean, sound and have an “open”/absorptive surface (“tooth and suction”). All slabs must be mechanically prepared (i.e. Shot blast or grinding using hand tools) to a concrete surface profile (CSP) 3 – 5 per the International Concrete Repair Institute (ICRI) Guideline No. 301-2R-2013. The Slab must provide a firm, unyielding surface with no sharp changes or abrupt breaks in grade. The Sand-blasting grit or grinding waste generated by hand tools will be contained and cleaned through vacuum attachments and tested and disposed of according to waste protocols.
- c) After surface preparation, check slab surface with the water drop method. Pour a drop of water about the size of a dime in several places. If the water beads, the surface is not absorptive and requires additional preparation or core extraction and testing. If the water “wets out” or penetrates the concrete within 30 – 60 seconds the surface is ready to receive the Aquafin SG-2 or equivalent treatment.
- d) After mechanical surface preparation, treat surface with a degreasing cleaning agent by the “Detergent Scrubbing” method as outlined in ICRI Guideline No. 310.2R-2013. Multiple cleaning cycles may be required. Dispose of the oily wastewater in accordance with federal, state and local regulations as mention above through the sump pump.
- e) Preparation and mixing of the Aquafin SG-2 or equivalent products will occur according to manufacturer’s specifications
- f) Wastes generated during the preparation of the concrete surface will be drummed and a sample collected for disposal options.

3) Installation of Aquafin SG-2 or equivalent:

- a) All surfaces must be saturated surface dry (SSD) with no standing water.
- b) Pour Aquafin SG-2 or equivalent, in sufficient quantity over the area to be treated (refer to “Application Rates” chart) and uniformly distribute with a 3/16” to 1/4” (4.5 mm to 6 mm) notched squeegee or non-shed 3/8” nap roller to the SSD substrate
- c) Carefully scrub material into the substrate with a long-handled scrub brush.
- d) Follow with a non-shed roller to achieve uniform coverage.
- e) Immediately (within 2 minutes) broadcast clean, oven dried #20 - 50 silica sand, or equivalent (ASTM E11 No. 18 - 35 sieve size [0.5 - 1.0 mm dia.]) to “rejection” (full broadcast), or at a rate up to 30 - 50 lb/100ft² (1.5 kg/m²) into the fresh (wet) SG2.
- f) Allow to cure a min. 12 hours before removing all excess sand.
- g) Immediately clean all equipment and tools with mineral spirits

Tolerances, Repairs and Cleaning specifications will be provided in a more detailed product data sheet to be attached. The Installer is responsible for proper product application.

4) Installation of Stego Drago Wrap and Sealant or equivalent:

- a) Drago Wrap or equivalent will be installed per manufacturer’s instructions.
- b) Drago Sealant or equivalent comes in a 1.8-gallon kit size, consisting of Part A (Resin) and Part B (Hardener). Pour Part B into Part A, mix well, and immediately place around pipe penetrations to create



a seal. Use in conjunction with Drago Sealant Form or equivalent to efficiently and effectively cover the penetrated area.

- c) After the Aquafin SG-2 or equivalent cures and dries, a coat of Drago Vapor Sealant or equivalent will be applied on top.
- d) After the first coat cures, a second coat will be applied.
- e) IMPORTANT: ALL PENETRATIONS MUST BE SEALED. All pipe, ducting for the sump pump, I-Beam, and elevator piston will be sealed using Drago Wrap or equivalent, Drago Tape or equivalent, and/or Drago® Sealant and Drago® Sealant Form or equivalent. Drago accessories or equivalent should be sealed directly to the penetrations.
- f) During installation of the waterproofing coating and preparation of the shaft slab, the metal diamond plate will be removed from the floor. At this time the plate will be prepared by covering it with the Drago Tape or equivalent and a coat of the Sealant. When applied back to the surface of the slab the Drago Sealant forms or equivalent will be used to pour and affix the plate to the slab with Drago Sealant or equivalent.
- g) In a similar fashion, a lid will be utilized to complete the waterproofing and vapor barrier on top of the sump, the plate will have cut-out to fit a close around the sump pump piping as best as possible. The lid will be wrapped with Tape, coated with Sealant and the junction with the pipes themselves will also be wrapped with the Tape and Sealant poured to form a tight seal as written below:
 - a. Cut a hole in lid such that the membrane fits over and around the base of the pipes as closely as possible, ensuring that it is flush with the base of the penetrations.
 - b. Install Drago Sealant Form or equivalent continuously around the entire perimeter of the group of penetrations and at least 1 inch beyond the terminating edge of Drago Wrap or equivalent.
 - c. Pour Drago Sealant or equivalent inside of Drago Sealant Form or equivalent to create a seal around the penetrations.
 - d. If the void space between Drago Wrap or equivalent and the penetrations is not minimized and/or the base course allows for too much drainage of sealant, a second coat of Drago Sealant or equivalent may need to be poured after the first application has cured.

Installation Inspection and Testing

PSI will provide technical oversight and visual inspection during the remedial activities. This will include the following tasks:

- Daily monitoring of site conditions;
- Assessment of health and safety conditions;
- Photographic documentation of the activities;
- Collection of confirmation samples following application of the vapor barrier through a combination of smoke tests and/or other equivalent air sampling methods after work is completed and compared to prior results; and
- Coordination and support of on-site construction subcontractors.



Manufacturer supplied information, including safety data sheets (SDSs) are appended.

Contractors are required to prepare a written health and safety plan to help to ensure that workers, visitors and employees will be protected from PCB exposure and prevent the further release of PCBs into the environment. The plan should generally include, but is not limited to:

- Personnel performing vapor barrier installation-related tasks should have the training required by OSHA, including, but not limited to, HAZWOPER 40-hour training, medical surveillance, and respirator fit testing.
- Specifications for personal protective equipment (PPE), including clothing, gloves, and respiratory protection.
- Specifications for safe work practices in the work area and exclusion of eating, drinking, smoking, or otherwise compromising the PPE or respiratory protection.
- Specifications regarding possible contingency plans pertaining to accidental spills and/or contamination in the work area or outside the work area.
- Mandatory and proper use of the decontamination facilities when exiting the work area.
- Specification of air monitoring, both personal and area monitoring, prior to the work, during the installation procedure, and after the installation procedure has been completed.

A copy of the Health and Safety Plan for this project is appended.



7 DECONTAMINATION OF TOOLS, EQUIPMENT, AND MOVABLE EQUIPMENT

Any water, etc. to be used during the cleaning and installation process will be collected in a 55-gallon labeled drum. At the end of the installation and cleanup process, the contents of the drum will be sampled for PCBs in accordance with EPA Method 8082A. The drum and contents will be turned over to Washington University's Environmental Health and Safety Department for proper disposal.

All rubber boots, tools, equipment, etc. will be wiped with an approved cleaning agent (i.e. mineral spirits) and will be removed from the work site after proper decontamination procedures and when the tool, equipment is no longer needed.

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8 WASTE DISPOSAL – PCB REMEDIATION WASTE AND CLEANUP WASTES

For any liquid wastes, the liquid will be sampled via EPA Method 8082A, the 55-gallon drum will be turned over to Washington University's Environmental Health and Safety Department for proper disposal. For personal protective equipment, etc. due to the levels of the known PCBs, it is not anticipated that these items will be considered PCB remediation wastes, therefore, these items will be turned over to Washington University's Environmental Health and Safety Department for proper disposal as defined in 40 CFR Section 761.61 (v) 0 Cleanup Wastes.

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9 PCB CLEANUP REPORT

Following completion of the waterproofing coating and vapor barrier installation and collection of confirmation samples, PSI will prepare a report documenting the installation process. The report will be prepared and submitted for review to Washington University detailing the above steps and execution of this work plan. The report will initially be provided in a draft form.

Upon completion of the review and comments, PSI will submit the report along with the appropriate Tool for the EPA PCB FAST. In addition, the report will include a summation of all previous work done with source/cause of release, updated data tables and figures to the EPA PCB FAST to the EPA Region 7 office.

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10 LAND USE RESTRICTIONS

Because the potential PCB-contaminated soil is inaccessible and will be until such time as Urbauer Hall is demolished, Washington University will draft a land use covenant applicable to the site. The covenant will be drafted and prepared by Washington University's in-house counsel after consultation, review and concurrence with EPA, if necessary.

This covenant, if required, will include the report as listed in Section 9 of this Work Plan.

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APPENDIX A: TOOL 1 AND TOOL 2

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TOOL 1: Initial Discussion with Responsible Party Checklist

This checklist can be used by EPA or Responsible Parties to guide the conversation during early discussion regarding a potential PCB cleanup site.

- ☐ Date of Contact:
- ☐ Contact between EPA Annah Murray RP and Linda Vishino - Washington University EH&S
- ☐ Where is the site located? **Danforth Campus - South of Throop Drive and to the Southeast of the Power Plant**
- ☐ Who are the project stakeholders and contact information?

Name	Organization	Email	Phone
Linda Vishino	Washington University EH&S	vishinol@wustl.edu	(314) 273-4568
Robert Hall	Washington University - Facilities	hall@wustl.edu	(314) 935-6038
Tim Rupert	Intertek-PSI	tim.rupert@intertek.com	(913) 310-1613

- ☐ Have you discussed this cleanup with State or local authorities? If so, whom?
Yes, Annah Murray with EPA.
- ☐ Do you have environmental data? If yes, what are the PCB concentrations?
7-77 micrograms/100 CM² on wipe samples on concrete surface of elevator pit//1-11 micrograms/L in sump pit water//116-39,100 micrograms/kg in concrete cores of pit//ND-264,000 micrograms/kg in clay beneath pit//19.7-7,020 micrograms/kg in sand beneath pit//No PCBs detected in groundwater.
- ☐ Are there other contaminants?
No.
- ☐ Do you know the source of the PCB contamination?
Elevator Hydraulic Fluid - Date of leak unknown.
- ☐ What is the current land use or activities on the property?
Education Facility - College Level
- ☐ What are the surrounding land uses? In particular, are there any sensitive uses such as residential, education, water storage, farming (e.g., livestock, crops), and fishing?
Educational Facilities - College Level
- ☐ Are there potential pathways of direct exposure (direct human contact, migration to waterways – storm drains or runoff, sensitive ecological receptors)?
Direct human contact, but access to elevator pit has been prohibited.
- ☐ Is there a potential unacceptable current exposure? If yes, contact your supervisor immediately.
No.
- ☐ Are there any historic or cultural resources in the vicinity?
No.
- ☐ What is the future or proposed land use?
Educational Facility - College Level

- ☐ What is the proposed redevelopment plan, if any?
None Planned
- ☐ What is the timing of the cleanup?
As soon as possible.
- ☐ Are you planning to submit a self-implementing notification or a risk based application?
Risk Based Application.
- ☐ Would you like to meet to discuss the framework for conducting this cleanup?
If necessary.

TOOL 2: PCB Sites Cleanup Framework

The purpose of the PCB Sites Cleanup Framework (Framework) is to summarize the goals and expectations of the cleanup. The key principle of PCB FAST is early discussion and agreement on the overall cleanup strategy. Tool 2 is a template that can be modified to fit site specific situations. This document is usually prepared by the responsible party (RP) and then shared with EPA so that the EPA project managers can review it prior to the first meeting.

Project Name: WU - Urbauer Hall - Elevator Pit - PCB/Worker Isolation by Vapor Barrier Installation

Name of project as it will appear on application/notification.

Basic Contact Information

Site Owner Name: Washington University in St. Louis

Party Conducting Cleanup: To be Determined

Email: TBD

Telephone: TBD

Email Address: tim.rupert@intertek.com

Consultant: Intertek-PSI

EPA Project Manager: Annah Murray

EPA Manager: _____

General Project Overview

➤ ***Site description and source of contamination:***

Urbauer Hall - Danforth Campus - Washington University in St. Louis. Constructed in 1959 as a College Level Education facility. PCB source determined to be from hydraulic elevator leak. Discovered in 2002 when load test failed. Cleanup produced 7 drums of waste. Work was performed as an oil spill and all visible oil contamination in sand and soil was removed. PCBs still present in sand and clay beneath pit. Through hydrostatic pressure ground water is forced up through the sand and clay and allows oil/water to seep onto porous concrete floor of elevator pit. Floor liquid sampling detected 548,000 ug/Kg of PCBs.

➤ ***Contaminants and summary of available data:***

Levels of PCBs were detected in the clay and sand underneath the concrete elevator pad as well as in the liquid found on the surface of the concrete pad. Subsequent air sampling was conducted for PCBs, with all results except one being below actionable levels. Laboratory analytical results are attached to this document.

➤ ***Any concerns with regards to offsite migration, including any potentially impacted offsite receptors:***

No concerns with offsite migration or potentially impacted offsite receptors.

➤ ***Preferred regulatory cleanup approach:***

Risk Based Application)

- **Preferred technical cleanup approach:** *Installation of a vapor barrier to stop potential PCB vapor exposure to occupants and to elevator repair personnel.*
- **Alternate cleanup approaches:** *N/A. Not feasible to remove all contamination until the building is demolished.*

Project Coordination

- **Description of planned regular communication:** *Weekly e-mail communications to discuss project development and any regulatory concerns.*
- **Proposed project schedule:** *Installation of the vapor barrier is scheduled to begin as soon as EPA approval is given.*
- **Description of roles and responsibilities for different organizations and stakeholders:** *Intertek-PSI acts as the Environmental Consultant on behalf of Washington University in St. Louis.*
- **Dispute elevation:** *Tim Rupert with Intertek-PSI and Linda Vishino with Washington University EH&S should be contacted first when an issue arises.*
- **Planned site visit:** *As soon as possible at the EPA's discretion.*



APPENDIX B: HEALTH AND SAFETY PLAN

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SITE SPECIFIC HEALTH AND SAFETY PLAN

Approvals		Initials
Date	8/29/19	
Prepared By	Tim Rupert	
Approved By	Greg Chambliss	

PROJECT INFORMATION

Date(s) of Field Work: To Be Determined

Project Name: PCB Containment Urbauer Hall Project Number: 00294226-2 Client: Washington University

Site Address: 1 Brookings Dr, St. Louis, MO 63130 ☐ Site Plan Attached

Scope of Work: PCB containment via waterproofing and vapor barrier

Type of Project: ☒ Environmental; ☐ Geotechnical; ☐ Industrial Process; ☐ Other: _____

☐ HAZWOPER Project: Training & Medical Surveillance must conform to 29 CFR 1910.120 & ECS Guidelines.

☐ Client Specific Requirements (Attached)

KEY CONTACTS

Project Manager: Greg Chambliss

Phone: 314-432-8073 ext 15 Cell: 314-565-1555

Project H&S Manager: Greg Chambliss

Phone: 314-432-8073 ext 15 Cell: 314-565-1555

Site H&S Manager:

Phone: _____ Cell: _____

Client Contact: Linda Vishino

Phone: 314-273-4568 Cell: _____

Client's Site Contact: _____

Phone: _____ Cell: _____

Other: _____

Phone: _____ Cell: _____

Other: _____

Emergency Medical Facility: SSM Health St. Mary's Hospital

Address: 6420 Clayton Road, Richmond Heights, MO 63117

Phone Number (general): 314-768-8000

Phone Number (emergency): 314-935-5555 (WU Police Dept)

☒ Emergency Medical Facility Confirmed

☒ Map to the hospital is attached

Police: 314-935-5555 Fire: 314-935-5555 Paramedic/Ambulance: 314-935-5555

Poison Control Center: 800-492-2414

EMERGENCY PROCEDURES

Medical Emergencies

1. Remove injured or exposed person(s) from immediate danger if possible.
2. Evacuate other on-site personnel to a safe place out of the work area until it is safe for work to resume.
3. If serious injury or life-threatening condition exists, call 911 - Paramedics, fire department, police, Hospital emergency room. Clearly describe location, injury and conditions to dispatcher/hospital. Designate a person to direct emergency equipment to the injured person(s).
4. Provide first aid if necessary. Remove protective clothing only if this can be done without endangering the injured person.
5. Call the project manager and/or project health and safety officer.
6. Immediately implement steps to prevent recurrence of the accident.

Accidental Release of Hazardous Materials or Wastes

1. Evacuate all on-site personnel to a safe place until the PM or PHSO determines that it is safe for work to resume.
2. Immediately instruct a designated person to contact the PM or PHSO.
3. Contain spill, if it is possible and it can be done safely.
4. Initiate cleanup.

General Emergencies

In the case of fire, flood, explosion, or other hazard, work shall be halted and the local police/ fire department shall be notified by calling 911. All on-site personnel will be immediately evacuated to a safe place.

Emergency Equipment Onsite

☒ First Aid Kit; ☒ Fire Extinguisher; ☒ Eye Wash; ☐ Other: _____

CHEMICAL HAZARDS

CHEMICAL	EXPOSURE LIMITS		KNOWN/EXPECTED CONCENTRATIONS	HEALTH HAZARDS
	OSHA	USEPA		
polychlorinated biphenyl - PCBs	0.5 ppm – skin 1.0 ppm - air	500 ng/M3 – indoor school air	680 ng/M3 and free product	Carcinogen, Hepatotoxin and reproductive toxin
2,4,6-tris-(dimethylaminomethyl)Phenol	10 PPM - skin	NIOSH REL – 10 ppm - skin	<10 ppm	Corrosive
Bis(dimethylamino)methylphenol	5 ppm - skin	NIOSH REL – 5 ppm - skin	<5 ppm	Corrosive

PHYSICAL HAZARDS:

☒ Heat Stress ☐ Cold Stress ☒ Wet ☒ Noise
☒ Slip, Trip, & Fall ☐ Heavy Equipment ☐ Electrical Hazards
☐ Underground Hazards: One Call Ticket # Date Called: _____
☐ Private Locator Utilized: _____ ☒ Overhead Hazards – Proper Lock out/Tag Out
procedure will be needed in place to take elevator off line and ensure against crushing worker in elevator shaft.
☐ Traffic ☐ Excavations/Trenching ☐ Confined Space
☒ Other: Potential caustic corrosives

BIOLOGICAL HAZARDS:

☐ Pathogens: _____ ☐ Mold: _____
☐ Plants: _____ ☐ Insects: _____
☐ Other Fauna: _____ ☐ Other: _____

SITE CONTROLS: Only essential personnel (operator, approved contractors) will be allowed in the elevator shaft when work is being performed. "Caution" tape will be used to isolate the work area from non-essential personnel.
All approved contractors must provide proof of training prior to entry.

Before Mobilization to the Site, the attached Pre-Work Hazard Assessment Inventory for the work being performed at Urbauer Hall must be reviewed, filled-in and amended as necessary. In addition, a daily, morning 'Tailgate Meeting' will be performed to review the dangers and observations from the previous day and to go over what might be a hazard for the following day. Mandatory signatures for all in attendance and if any visitors or new employees or contractor come to the work area during the day, the site H&S manager will review the notes from that Safety Tailgate meeting and have them sign in as well. It is important to record who is present at the site at all times for safety and contamination purposes.

PERSONAL DECONTAMINATION PROCEDURES: Level C PPE is anticipated to be adequate for the scope of work proposed at the site. It is recommended that anyone entering into the elevator pit don protective clothing. Full Tyvek suits and Tyvek boot covers will be required prior to entry. Upon exiting, they will be removed and disposed of in the marked bin. All work in the elevator shaft will be performed with nitril gloves at a minimum and upgraded to the equivalent gloves necessary for type of work being performed. Gloves and Tyvek suits will be changed with each exit and re-entry into the elevator shaft to eliminate cross contamination.

PERSONAL PROTECTIVE EQUIPMENT

☒ Eye Protection: ☒ Safety Glasses ☐ Splash Goggles; ☒ Face Shield; ☐ Other: _____
☐ Hard Hat ☐ Steel-Toed Boots ☒ Chemical Resistant Boots
☐ Traffic Safety Vest ☒ Hearing Protection: _____
☒ Protective Clothing: ☒ Tyvek®; ☐ Coated Tyvek®; ☐ Sarinex; ☐ Other: _____
☒ Gloves: ☒ Nitrile; ☐ PVC; ☐ Neoprene; ☐ cloth/leather; ☐ Other _____
☒ Respiratory: ☐ Full-Face APR; ☒ Half-Face APR
☒ Filter: ☒ Organic Vapor; ☐ Acid Gas; ☐ HEPA; ☐ Other: _____
☐ Other: _____

If air monitoring in the workers' breathing zone exceeds 1000 µg/m³ for 60 seconds or longer, upgrade to Level B (APR) or vacate the immediate area. Proper PPE will be adjusted daily depending on stage of work performed that day and air monitoring reading. See waterproofing and vapor barrier specific requirements attached. When caustic corrosives are applied, properly rated covering and respiratory protection will be worn.

For further respiratory protection from dust and caustic fumes, a negative pressure ventilation system will be applied to the work space during occupancy in the elevator shaft. The temporary and portable ventilation system will protect the workers from potentially harmful atmospheres such as fumes/vapors and excessive dust in addition to the respirators the workers will be wearing. Portable ducting will vent outside of the building and be easily dismantled when not in use. The blower canister will collect any dust particles for containment and disposal.

MONITORING EQUIPMENT

☐ Photo Ionization Detector with 10.6 eV lamp ☐ Flame Ionization Detector
☒ Combustible Gas Indicator ☒ Oxygen Meter
☐ Detector Tube (Brand: _____) – Tubes: _____
☐ Hydrogen Sulfide Meter
☐ Passive Dosimeter _____
☐ Air Sampling Pump – Filter Media: _____
☒ Other: Sorbent Tube sampling (Air)

Frequency of monitoring: prior-during-after work performed

Dual monitoring programs will be in effect. One involving general breathing conditions to monitor oxygen, carbon dioxide, carbon monoxide and combustible gases/asphyxiant levels such as caustic fumes and concurrently, PCB levels in the breathing zones for worker protection. See attached PCB air monitoring procedure.

Industrial Site - Environment, Health & Safety Plan

Project: Washington University - Urbauer Hall - Elevator Pit PCB

Description: Containment inside Elevator Pit

Company: Professional Service Industries, Inc. (PSI) Contact: Greg Chambliss Phone: 314-432-8073

Site/Client Notification Contact: Jim Bauer - 314-581-0014 / Jim Ambrose - 314-502-3400

At Pre - Job Meeting: (Check when complete)

- ☐ 1. Review scope of work
- ☐ 2. Review site conditions
- ☐ 3. Discuss workforce requirements: (Obtain names, insurance verification, etc.)

Additional items to consider is medical surveillance required, special training, specific certifications

- ☐ 5. Discuss project schedule: Start Date: _____ Completion Date: _____
- ☐ 6. Discuss materials management: (Who provides what, where to store, etc. Will there be sub-contractors?)
- ☐ 7. Walk through job site
- ☐ 8. Job safety plan: Develop a plan that explains the procedure or steps intended to be used to complete the project. The description requires a thoughtful detailed look at each step of the job process to imagine the potential environmental, safety and health hazards that may exist.
- ☐ 9. Discuss notification requirements (Notification chain - Site supervisor, Department manager, Client contact)

Note: Use the following format to develop the job safety plan. Use as many pages as necessary to adequately plan the job.

<u>Job Steps</u>	<u>Potential Danger</u>	<u>Measures to Eliminate Danger</u>
Who/How	What/When/Where	Who/What/When/Where/How
(Steps of the job in sequence)	(Potential accident or hazards during job steps)	(Precautions to eliminate or avoid hazards) (Personal protective equipment)

Hazard Assessment Inventory

The following Hazard Assessment Inventory checklist provides some hazard categories to consider, such as:

Electrical Hazards (Are high voltage power lines >750 Volts within 10 feet? Will clearance permits be required?) – [Not Applicable](#)

Fall Potential (Will the job require working over 6 feet? Will fall protection be needed for this job? Is roof access required?) – [NO](#)

Ladders (Will ladders be required?) – [Small step ladder maybe required to get down into elevator pit.](#)

Scaffolds (Are scaffolds required? If yes, scaffolds must be in compliance with OSHA Standard 1926.451 and 1926.454.) - [NO](#)

Personnel Lifts (Will they be used? If yes, lifts must be in compliance with OSHA Standard 1926, Subpart N.) - [NO](#)

Digging/Excavation (Are permits required? Will trenches be deeper than 5 feet? If yes, will shoring or sloping be used? Competent persons?) - [NO](#)

Confined Spaces (Are there any? Competent persons?) – [Not Applicable](#)

Atmospheric Conditions (Is there exposure to heat stress, poor ventilation, etc.?) - [NO](#)

Noise (Will the job be in an area where noise levels >85 dBA? Will the work generate noise >85 dBA?) - [NO](#)

Hazardous Materials (Will hazardous materials be brought on site by the contractor? MSDSs must be provided and communicated) – [Potential PCB Exposures – Personal Protection Equipment is necessary](#)

Respiratory Protection/Dust (Will respiratory protection be required? Will dust be a concern?) – [Airborne levels of PCBs not known inside elevator pit, need to wear ½ mask respirator equipped with Organic Vapor Cartridges.](#)

Hazard Awareness (Has the area where work is being performed been "walked down" and potential hazards noted?) – [Noted and Marked by WU EH&S](#)

Medical Surveillance (Is medical monitoring of any type required for the performance of work? Are respirators worn?) – [Covered under PSI's program](#)

SITE ENVIRONMENT, HEALTH & SAFETY PLAN

Project Description: PCB Containment - Urbauer Hall Elevator Pit

Prepared By: Greg Chambliss

Date: 08/27/19

JOB STEPS	POTENTIAL DANGER	MEASURES TO ELIMINATE DANGER
Job Step #1 - Make sure elevator is locked out and access is provided to the elevator pit. Job Step #2 - Locate closest electrical outlet, if none in the elevator pit. If outside elevator pit, make sure extension cord is not a trip hazard (Tape down as needed) Job Step #3 - Don Disposable Suit, double layer of booties, latex gloves, and 1/2 mask respirator equipped with Organic Vapor Cartridges.	Potential to get crushed by Elevator Cab. Trip hazard for yourself and occupants in the building, if any. Potential exposure is unknown. Don protective clothing to keep any oils from being on bottom of boots. Provide a polyethylene drop cloth on the ground in the basement hall immediately adjacent to the elevator pit to be used as a step-off area. Secure to the floor to prevent a slip hazard. Replace on a daily basis or as necessary.	Double Check with Personnel from Kone Elevator to ensure Elevator is properly locked out. Will also follow Washington University's Environmental Health and Safety Department's Lock-Out/Tag-Out procedures.

SITE ENVIRONMENT, HEALTH & SAFETY PLAN

Project Description: PCB Containment - Urbauer Hall Elevator Pit

Prepared By: Greg Chambliss

Date: 08/27/19

JOB STEPS	POTENTIAL DANGER	MEASURES TO ELIMINATE DANGER
<p>Job Step #4 – Any time when leaving the work area, remove protective clothing and place into plastic bag/bin for disposal.</p> <p>Job Step #5 – On a daily basis, prior to entering the elevator pit, make sure to follow Step #1.</p>	<p>No need to don protective clothing outside of the elevator pit as previously sampling has determined the air levels acceptable. No need to alarm the general public.</p>	

Elevator Shaft – PCB Containment Pre, During and Post Air Monitoring Procedure

Air sampling shall be performed at the following locations before the start of the installation work specified in this Work Plan.

- Location 1: Inside the freight elevator pit, with the freight elevator door closed;
- Location 2: Inside the freight elevator cab, with the freight elevator door closed;
- Location 3: Outside the freight elevator door on the basement level;
- Location 4: Outside the freight elevator door on the 1st floor;
- Location 5: Outside the freight elevator door on the 2nd floor; and
- Location 6: Outside the freight elevator door on the 3rd floor.

Air sampling shall be performed at the following locations each day the installation work specified in this Work Plan is performed:

- Location 1: Outside the freight elevator door on the basement level;
- Location 2: Inside the freight elevator cab, with the freight elevator door closed;
- Location 3: Outside the freight elevator door on the 1st floor;
- Location 4: Outside the freight elevator door on the 2nd floor; and
- Location 5: Outside the freight elevator door on the 3rd floor.

Air sampling shall be performed at the following locations after the installation work specified in this Work Plan has been completed:

- Location 1: Inside the freight elevator pit, with the freight elevator door closed;
- Location 2: Inside the freight elevator cab, with the freight elevator door closed;
- Location 3: Outside the freight elevator door on the basement level;
- Location 4: Outside the freight elevator door on the 1st floor;
- Location 5: Outside the freight elevator door on the 2nd floor; and
- Location 6: Outside the freight elevator door on the 3rd floor.

Each of the samples shall be collected using a sorbent tube with Polyurethane Foam (PUF) [SKC 226-92 or equivalent]. Sampling shall be performed using a vacuum pump calibrated to the following flow rates for the following durations:

- Air sampling prior to the start of the installation work: 5 liters per minute for a maximum of 300 minutes;
- Air sampling during the installation work: 1 liter per minute for the duration of the work during the day; and
- Air sampling after the installation work has been completed: 5 liters per minute for a maximum of 300 minutes.

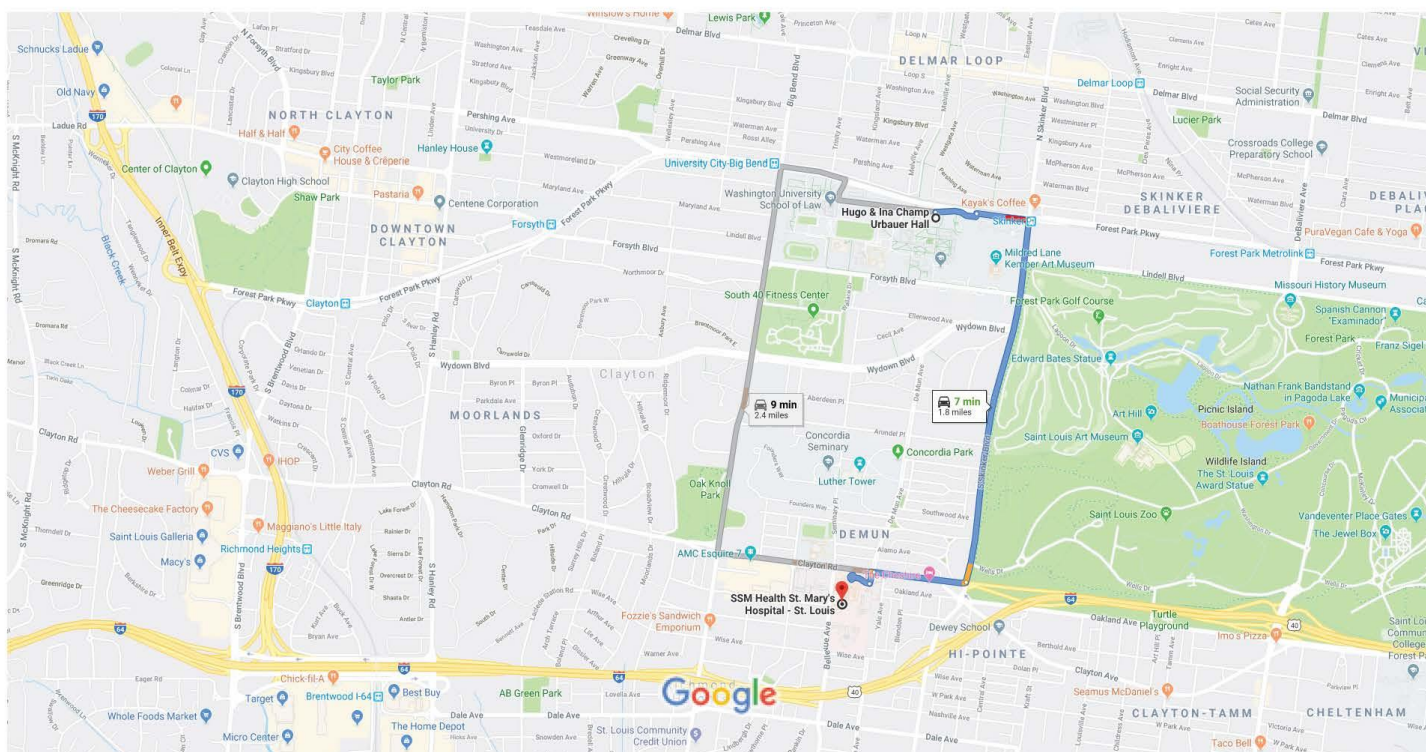
In addition, each sampling event shall have one quality assurance/quality control (QA/QC) field blank collected and submitted for analysis.

The sorbent tube sample shall be analyzed using the current edition of the Compendium Method TO-10A, *Determination of Pesticides and Polychlorinated Biphenyls in Ambient Air Using Low Volume Polyurethane Foam (PUF) Sampling Followed by Gas Chromatographic/Multi-Detector Detection (GC/MD)* from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air (EPA 625/R-96-010b) at an appropriately American Industrial hygiene Association (AIHA) accredited laboratory. The results of the analysis shall be reported in nanograms per cubic meter (ng/m³).



Hugo & Ina Champ Urbauer Hall to SSM Health St. Mary's Hospital - St. Louis

Drive 1.8 miles, 7 min



Map data ©2019 Google

1000 ft

Hugo & Ina Champ Urbauer Hall

St. Louis, MO 63105

- ↑ 1. Head east on Throop Dr toward Hoyt Dr
0.1 mi
- 2. Turn right onto Forest Park Pkwy
0.2 mi
- 3. Turn right onto N Skinker Blvd
1.1 mi
- 4. Turn right onto Clayton Rd
0.3 mi
- ↶ 5. Turn left after Commerce Bank (on the right)
233 ft
- 6. Turn right
433 ft

SSM Health St. Mary's Hospital - St. Louis

6420 Clayton Rd, Richmond Heights, MO 63117

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.



APPENDIX C: NOTIFICATION OF PCB ACTIVITY – EPA FORM 7710-53

DRAFT

Notification of PCB Activity

Return To:

Document Control Officer (5305P)
Office of Solid Waste
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, DC 20460-0001

For Official Use Only

1. Name of Facility

Name of Owner Facility

2. EPA Identification Number (if already assigned under RCRA)

3. Facility Mailing Address (Street or PO Box, City, State, & Zip Code)

4. Location of Facility (No. Street, City, State, & Zip Code)

5. Installation Contact (Name and Title)

6. Type of PCB Activity (Mark 'X' in appropriate box. See Instructions.)

☐

A. Generator w/onsite storage facility

☐

B. Storer (Commercial)

☐

C. Transporter

☐

D. R&D/Treatability

☐

E. Approved Disposer

☐F. Scrap Metal Recovery Oven/Smelter,
High Efficiency Boilers

Telephone Number (Area Code and Number)

7. Certification

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as a company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

Signature

Name and Official Title (Type of Print)

Date Signed

Paperwork Reduction Act Notice

The annual public burden for this collection of information is estimated to average 0.57 hours per response. This estimate includes time for reading instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to: Director, Collection Strategies Division, U.S. Environmental Protection Agency (mail code 2822), 1200 Pennsylvania Ave., N.W., Washington, D.C. 20460-0001. Include the OMB number identified above in any correspondence. Do not send the completed form to this address. The actual information or form should be submitted in accordance with the instructions accompanying the form, or as specified in the corresponding regulations.



APPENDIX D: MANUFACTURER-SUPPLIED INFORMATION, AQUAFIN SG-2 OR EQUIVALENT

DRAFT

VAPORTIGHT COAT®-SG2

Oil & Water Vapor Barrier Coating

CSI Div. 07 + 09

07 26 00 VAPOR RETARDERS
09 96 56 EPOXY COATINGS

LEED Points:

IEQ Credit 4.2, Low-Emitting Materials, Paints & Coatings: 1 Point
Using this AQUAFIN product can help contribute to LEED certification of projects in the categories shown above.

Product Description:

VAPORTIGHT COAT®-SG2 is a unique 2-component, alkali resistant, moisture tolerant, extremely high density and chemically enhanced epoxy based product which prevents capillary infiltration of oil and other chemicals from the ground. Applied in one coat, SG2 reduces the passage of water vapor and moisture through slabs and walls, thus eliminating delamination of adhesives, floor coverings and coatings.

Typical Applications:

- Indoor and outdoor, new and existing concrete slabs: on grade, above grade, below grade and split slabs.
- Oil and other chemically contaminated slabs.
- Industrial/retail facilities, office buildings, hospitals and schools, food processing plants, secondary containment slabs, etc.

Advantages:

- Low VOC and meets USDA/FSIS guidelines
- High chemical and alkalinity (pH 14) resistance
- Barrier against radon & other gases
- Excellent adhesion to steel
- Compatible with most flooring systems
- Minimal downtime - flooring system installed next day
- Does not support mold growth
- Protects non-breathable floor coverings/coatings from water vapor transmission through concrete substrates.
- Full broadcast system - provides excellent substrate for bonding
- Seals oil contaminated slabs
- For slabs with MVER up to 25 lbs and RH up to 100%
- Can be applied to 5 day old concrete and damp concrete slabs

Testing Concrete Slabs for Contaminants:

Aquafin recommends testing slabs with unknown history, as well as slabs with previously failed flooring systems, for contaminants (i.e. hydrocarbons, other organic compounds, un-reacted water soluble silicates, chlorides, ASR, Sulfurous compounds, etc.) to determine suitability of SG2. Provide Ion Chromatography and IR Spectroscopy data to Aquafin before commencing application. A separation screed may be required.

Moisture Vapor Emission Testing:

Aquafin recommends testing to determine moisture vapor emission

Physical and Technical Data	
Material	2-component epoxy
Color:	White
Density:	14.66 lbs/gal (1.76 kg/L)
VOC:	47 g/L
Volume Solids	97.3 %
Flash Point: Part A Part B	>212°F (>100°C) 170°F (77°C)
Mixing Ratio:	100:12 (by weight)
Pot Life @ 73°F (23°C)	~60 Minutes
Open to Foot Traffic:	after 12 hrs at 73°F (23°C)
Application Temperature:	min. 45°F (8°C) – max. 95°F (35°C)
Curing Temperature:	min. 45°F (8°C)
Full Strength:	after 7 days at 73°F (23°C)
Compressive Strength:	>11,000 psi (>80 MPa)
Flexural Strength:	>4,300 psi (>30 MPa)
Adhesion to Concrete: (ASTM D-7234)	>480 psi (>3.3 MPa) @ 60 days Failure in substrate
Temperature Resistance:	Continuous Exposure: • Dry heat: 140°F (60°C) • Humid heat: 113°F (45°C) Intermittent Exposure: • High pressure water: 185°F (85°C); • 248°F briefly (120°C) • Dry heat 140°F (60°C)
All data are average values obtained under laboratory conditions. In practical use temperature, humidity and absorbance of the substrate may influence the above given values.	

rate (MVER) including "Anhydrous Calcium Chloride" testing as per ASTM F 1869-11 on slabs to be treated, to determine the MVER in lb/1000 ft²•24 hrs (grams/m²•hr) and to determine RH content (%) as per ASTM F 2170. This testing can be used to determine application rate of material required to obtain AQUAFIN warranty.

Substrate Preparation:

- Concrete must be a minimum 5 days old or have reached a minimum 2,500 psi (17 MPa) compressive strength, to be treated with SG2. Concrete must be clean, sound and have an "open"/absorptive surface ("tooth and suction"). All slabs must be mechanically prepared (i.e. Shot blast) to a concrete surface profile (CSP) 3 – 5 per the International Concrete Repair Institute (ICRI) Guideline No. 301-2R-2013. *Acid etching is not allowed, broom finish on new slabs is not acceptable.* Burn off any

VAPORTIGHT COAT®-SG2

reinforcing fibers and vacuum remains.

- After surface preparation, check slab surface with the water drop method. Pour a drop of water about the size of a dime in several places. If the water beads, the surface is not absorptive and requires additional preparation or core extraction and testing. If the water “wets out” or penetrates the concrete within 30 - 60 seconds the surface is ready to receive the SG2 treatment.
Note: This method does not replace pre-testing of concrete cores. A test application is highly recommended on existing slabs to determine adhesion (i.e. Elcometer, etc.).
- Treat saw cut and expansion joints as per drawings on page 3.

Separation Screed:

Concrete floors which contain water soluble, unreacted sodium and/or potassium silicates or chlorides can not be coated when certain thresholds of these compounds are exceeded. If these soluble mediums have deeper penetration into the substrate than standard steel shot blasting will remove, it will be required to remove 3/8" - 1/2" (10 mm - 13 mm) of the concrete surface and replace it with a separation screed, such as MORTAR-Screed to prevent substrate failure when trapped rising moisture activates these mediums. SG2 will then be applied over the separation screed. All separation screed surfaces must be mechanically prepared like a concrete surface (CSP 3 - 5) as indicated above.

Oil contaminated slabs:

Citrus based degreasing agents are recommended for hydrocarbon contaminated slabs containing low to medium amounts of oil. If the IR analysis reveals high concentrations of hydrocarbons then microbial remediation is required. *We strongly recommend carrying out a test application of SG2 for both remediation processes, prior to installation of SG2.*

- **De-greasing:** After steel shot blasting, treat surface with a degreasing cleaning agent by the “Detergent Scrubbing” method as outlined in ICRI Guideline No. 310.2R-2013. Multiple cleaning cycles may be required. Dispose of the oily wastewater in accordance with federal, state and local regulations.
 - **Microbial remediation:** Follow microbial product manufacturer’s instructions regarding application of microbes or “bugs”.
1. After de-greasing or microbial remediation, clean treated surface with high pressure water blasting (minimum 2,500 psi).
 2. The surface shall be damp/moist without standing water, when applying SG2. If the substrate dries before applying SG2, oil can rise again and prevent SG2 from bonding.

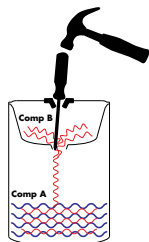
Water-Vapor Transmission Treatment:

1. Remove existing floor coverings, coatings, adhesives, curing compounds, efflorescence, dust, grease, laitance, etc. down to bare concrete with steel shot blasting, scarifying or grinding using a diamond cup blade (run with low RPM and assure that surface is profiled).
2. Repair cracks with a suitable patching mortar or SG2 mixed with 5 parts by volume of oven-dried sand.
3. Install cementitious underlayment’s or leveling mortars on top of SG2.

Mixing:

SG2 is supplied in the appropriate mixing ratio (Comp-A = resin, Comp-B = hardener). Always mix full units:

- Use chemical resistant gloves and goggles when mixing or applying SG2.



- Material should be min. 60°F (15°C) at time of mixing.
1. Pierce a hole through the rubber membrane in the lid and continue through the bottom of “lid well”. Assure that Part B completely drains into Part A.
 2. Stir mixture for approx. 5 minutes to a homogenous, streak free consistency, using a slow speed drill (approx. 300 rpm) with a PS Jiffy blade. Avoid entrapping air. Ensure that the material at the bottom and sides are scraped and thoroughly mixed.
 3. Pour mixed material from the mixing container into another, clean container and carefully mix for additional 30 seconds.

Application:

- Substrate and ambient temperatures must be between 45°F (8°C) and 95°F (35°C).
 - All exterior applications must be protected from strong sun light, wind and rain until fully cured. All interior applications must be protected from drafts to avoid “skinning over” before sand broadcast.
 - Application equipment needed: Clean mixing containers, soft-edge squeegee, non-shed synthetic roller, long handled scrub brush.
1. All surfaces must be saturated surface dry (SSD) with no standing water.
 2. Pour SG2 in sufficient quantity over the area to be treated (refer to “Application Rates” chart) and uniformly distribute with a 3/16” to 1/4” (4.5 mm to 6 mm) notched squeegee or non-shed 3/8” nap roller to the SSD substrate
 3. Carefully scrub material into the substrate with a long handled scrub brush.
 4. Follow with a non-shed roller to achieve uniform coverage.
 5. Immediately (within 2 minutes) broadcast clean, oven dried #20 - 50 silica sand (ASTM E11 No. 18 - 35 sieve size [0.5 - 1.0 mm dia.]) to “rejection” (full broadcast), or at a rate up to 30 - 50 lb/100ft² (1.5 kg/m²) into the fresh (wet) SG2.
 6. Allow to cure min. 12 hours before removing all excess sand.
 7. Immediately clean all equipment and tools with mineral spirits.

Flooring

- If the flooring system requires a primer over concrete, it should also be used over the broadcasted SG2.
- Water or solvent based adhesives may require a cementitious underlayment (see Aquafin LEVEL-Ultra TDS) of a minimum 1/8” (3 mm) thickness to absorb excess moisture/solvent (check with adhesive manufacturer).
- Pressure sensitive adhesives installed directly over SG2 require a longer “tack” time than listed on manufacturer’s literature to prevent adhesive moisture or solvent entrapment.
- Many flooring systems require a more level or smooth surface. In such cases an application of a self-leveling cementitious underlayment (minimum 1/8” (3 mm) thickness) is required to provide a proper substrate for the floor covering and the adhesive (See Aquafin LEVEL-Ultra TDS).

Underlayment’s and Patching:

If cement based toppings, such as underlayments, screeds, “flash” patching, repair mortars are to be used, the manufacturer’s recommended primer or SLU-PRIMER must be applied over SG2.

Packaging & Shelf Life:

- 2.2 gal kit = 33 lbs (8.5 L = 15 kg), which contains:
- A-Comp: 1.8 gal/29.5 lb (6.7 L/13.39 kg) (resin)

VAPORTIGHT COAT®-SG2

• B-Comp: 0.4 gal/3.5 lb (1.8 L/1.61 kg) (hardener).
Shelf life is 2 years in closed, original packaging, stored in a dry, cool place.

Limitations:

- Do not spray apply SG2.
- Post-cracking of the concrete, slab warping or warping relaxation at joints or cracks after installation of the SG2 may cause a breach in the coating and void warranty.
- Do not apply over gypsum based substrates.
- Do not alter mixing ratios, thin or mix with Cab-O-Sil.
- Call Aquafin Technical Department for slabs with floor heating systems or installation recommendations for any substrates and conditions not listed.

Note:

Installer is responsible for proper product application. Site visits by Aquafin personnel or representatives are solely for the purpose of making technical recommendations, not for providing supervision or quality control. This product is not sold to the Do-it-Yourself market. **For Professional Use Only.**

Safety: Refer to SDS.

Part A - irritant; sensitizer - contains epoxy resins.

Part B - corrosive; sensitizer - contains amines.

Avoid contact with skin and eyes and prolonged inhalation. Wear chemical resistant gloves and safety goggles. After contact with skin, wash immediately with water and soap and rinse thoroughly. In case of eye contact, rinse opened eye for several minutes under running water and immediately seek medical advice. After inhalation supply fresh air and call doctor for safety reasons. Use NIOSH/ MSHA approved vapor respirator in poorly ventilated areas.

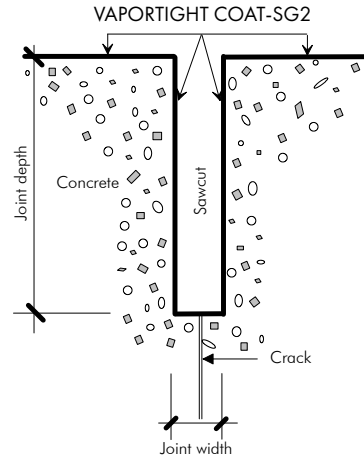
KEEP OUT OF REACH OF CHILDREN.

Spills: Ventilate area. Contain and collect spillage with noncombustible, absorbent materials (i.e. sand, vermiculite, universal binders, sawdust, etc.) and place in container for disposal. Emergency procedures are not required. Dispose of in accordance with current local, state and federal regulations. VOC limit: This product is well below the allowable EPA limits as stated in 40 CFR Part 59.

LIMITED WARRANTY: AQUAFIN, INC. warrants its products to be manufactured free of defects for one year and to be consistent with its standard high quality. We will replace or, at our election, refund the purchase price of, any product which is proven to be defective, provided that the product was properly applied. Our product

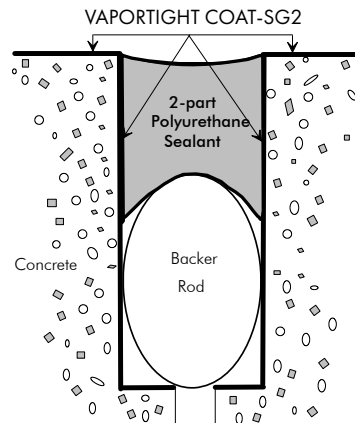
recommendations are based on Industry Standards and testing procedures. We assume no warranties either written, expressed or implied as to any specific methods of application or use of the product. AQUAFIN, INC. MAKES NO WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. AQUAFIN, INC. shall not be liable for damages of any sort including remote or consequential damages, down time, or delay. Contact Aquafin for information on extended warranty's.

Sealing Saw Cut Joints in Concrete Slabs:



- Coat slab surface with SG2 as per specifications.
- Coat sidewalls and bottom of cavity with SG2.
- Fill cavity with a flooring system manufacturer recommended joint filler.
- Touch-up slab surface if necessary.
- Install sub-flooring system.

Sealing of Expansion Joints in Concrete Slabs:



- Coat slab surface with SG2 as per specifications.
- Coat sidewalls and bottom of cavity with SG2.
- Allow SG2 to cure for min. 12 hrs at 73°F (23°C).
- Install backer rod.
- Fill cavity with a suitable polyurethane sealant as specified by the A/E.
- Install sub-flooring system.

"SG2" Application Rates & Yield of 2.2 gal (8.5 L) kit

MVER per ASTM F 1869-11 or RH per ASTM F-2170	No. of coats	Application rate ft ² /gal (k g/m ²)	Yield per 2.2 gal kit ft ² (m ²)	Appx. Thickness mils (mm)
up to 20 lbs MVER or < 95% RH	1	95	0.80	200
up to 25 lbs MVER or 95-100% RH	1	75	1.0	160
New concrete (min. 5 days old) and Oil contaminated slabs	1	95	0.80	200

Walls: contact our technical dept. Note: all values theoretical. Application thicknesses are approximate, some variations may apply due to porosity and absorption of substrate.

Sample Water Vapor Transmission Reduction Test : ASTM E 96-95, Test carried out by independent laboratory (wet method)

Water Vapor Transmission: • lbs/1000 ft ² * 24 hours • grams/m ² * hour	BEFORE: Untreated Control	AFTER: VAPORTIGHT COAT®-SG2	REDUCTION %
	19.24 3.91	Average of 6 samples: 1.03 0.21	95
Permeance: • perms • grams/Pa*s*m ²	15.54 8.89 x 10 ⁻⁰⁷	0.83 4.76 x 10 ⁻⁰⁸	95

Check our website for the latest version of the Technical Datasheet. Only the current version is legally binding - and only for the intended market. In cases of uncertainty contact our technical department for further information before starting any applications.



CHEMICAL RESISTANCE OF VAPORTIGHT COAT®-SG2

Chemical	short term Exposure Contact duration < 8 h **)	medium - limited Exposure Contact duration between 8 h and 72 h	high - long term Exposure Contact duration between 72 h and 3 Months	Not recommended
Acetic Acid 10%			•	
Acetone				•
Alcohol (<48% Methanol)		•		
Aliphatic aldehydes			•	
Amines			•	
Ammonia - aqueous <32%			•	
Ammonium thiosulfate <10% *)		•		
Aromatic esters & ketones			•	
Jet Fuel		•		
Benzene & benzene containing mixtures			•	
Caustic soda lye			•	
Chromic acid < 25%			•	
Crude oil			•	
Diesel			•	
EDTA acid <10% *)		•		
Engine oil & transmission fluid - used			•	
Esters - organic		•		
Ethylene glycol 100%		•		
Gasoline			•	
Glycerine <10% *)		•		
Glycol ether			•	
Halogenated hydrocarbons => C ₂			•	
Heating oil			•	
Hydrochloric acid 37%			•	
Hydrochloric acid 100%		•		
Hydrofluoric acid				•
Ketones		•		
Lye - inorganic				•
Methanol 100%	•			
Motor oil			•	
Sodiumhypochlorite (active chlorine content < 12%)			•	
N-Methylpyrrolidone <10% *)		•		
Organic acids (Carbon acids) excluding formic acid				•
Oxidizing agents like H ₂ O ₂ (hydrogen peroxide)				•
Phosphoric acid < 85%			•	
Salt water			•	
Sodium carbonate <10%*)			•	
Sodium metabisulfate <10% *)		•		
Sodium sulfite <10% *)		•		
Sodium thiosulfate <10% *)		•		
Solutions of organic acids <10%			•	
Solutions of inorganic, non oxidizing salts with pH 6			•	
Sulphuric acid < 50%			•	
Note: *) = at 70°F (20°C). Chemicals coming in contact with VAPORTIGHT COAT-SG1 or SG2 can discolor SG1 or SG2 on the surface. However, this does not affect the performance of SG1 or SG2. **) = surface of SG1 or SG2 must be inspected after contact with listed chemical.				

(01/22/07)

AQUAFIN, Inc.

505 Blue Ball Rd., #160

Phone (410) 392 - 2300

E-mail: info@aquafin.net

Elkton, MD 21921

Fax (410) 392 - 2324

http://www.aquafin.net

TOLL FREE 1 - 866 - AQUAFIN (1-866-278-2346)

GUIDE SPECIFICATION
VAPORTIGHT COAT®-SG2

Copyright 2001, AQUAFIN, Inc., 505 Blue Ball Road, Elkton, MD 21921 (410)392-3200 (800-394-1410)

SECTION 09601
CONCRETE FLOOR SEALER FOR OIL CONTAMINATED SLABS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Furnish all labor, materials, tools and equipment as necessary to perform installation of a liquid applied Concrete Floor Sealer on existing oil contaminated concrete slabs as shown on drawings and as specified in this section.
- B. Repairs and preparation of concrete floors.

1.2 REFERENCES

- A. ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 1998.
- B. ASTM E 1907 – Standard Practices for Determining Moisture-Related Acceptability of Concrete Floors to Receive Moisture-Sensitive Finishes; 1997.
- C. ASTM C 96 - Standard Test Methods for Water Vapor Transmission of Materials; 1995.
- D. ASTM D 4541 B Pull-Off Strength of Coatings; 1995, Modified

1.3 SUBMITTALS

- A. General:
Submit manufacturer's certification that proposed materials, details and systems as indicated and specified fully comply with manufacturer's details and specifications. If any portion of Contract Documents do not conform to manufacturer's standard recommendations, submit notification of portions of design that are at variance with manufacturer's specifications.
- B. Product Data:
 - 1. Submit manufacturer's literature, installation instructions and MSDS (Material Safety Data Sheet) for each product.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Company specializing in manufacturing products specified in this Section with minimum 5 years documented experience.
- B. Installer Qualifications:
 - 1. Acceptable to manufacturer with documented experience on at least 3 projects of similar nature in past 5 years and/or training provided by the product manufacturer.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store in a dry, well ventilated area at minimum 50 deg F (10 deg C) and maximum 90 deg F (32 deg C).
- B. Deliver materials in manufacturer's unopened containers fully identified with brand, type, grade, class and all other qualifying information. Provide Material Safety Data Sheets for each product.

1.6 SYSTEM REQUIREMENTS

- A. Coordinate floor sealing installation with other trades.
- B. Provide materials and accessories in timely manner so as not to delay Work.

1.7 PROJECT CONDITIONS

- A. Maintain surfaces to be sealed and surrounding air temperature at not less than 50 deg F (10 deg C).
- B. Exercise caution when temperatures exceed 90 deg F (32 deg C).

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Approved Manufacturers: AQUAFIN, Inc. 505 Blue Ball Road, #160. Elkton, MD, 21921. Phone (800) 394-1410, or (410) 392-2300, Fax (410) 392-2324; e-mail info@aquafin.net.
- B. Requests for substitutions will be considered only if submitted to the architect/engineer in writing and must include substantiation of product performance, 10 days prior to the original bid date.

2.2 MATERIALS

- A. Concrete Floor Sealer: One-part system consisting of a two-component, moisture tolerant, high density, low odor, chemically enhanced epoxy based product which must be compatible with floor finishes and adhesives approved by the manufacturer. Characteristics:

1. Product:	VAPORTIGHT COAT®-SG2
2. Component-A and B:	Precise blend of white and yellowish liquid
3. Compressive Strength:	>11,000 psi (>80 Mpa) (ASTM C-579, Modified)
4. Flexural Strength:	>4,000 psi (>27 Mpa) (ASTM D-638, Modified)
5. Bond/Adhesion:	>500 psi (>3.5 Mpa) at 28 days on damp/moist concrete (ASTM D-4541, Modified)
6. Permeance:	<1.0 perm (<5.7E-08 grams/Pa*s*m ²) (ASTM E-96)
7. Alkaline Resistance:	up to pH 14 (ASTM D-1308)
8. Cured for installation of flooring:	12–16 hrs at 73 deg F (23 deg C)
9. pH on cured surface:	7

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine all construction substrates and conditions under which concrete floor sealer material is to be installed. Do not proceed with the concrete floor sealer installation until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Protect adjacent surfaces not designated to receive concrete floor sealer.
- B. Substrate preparation:
 - 1. Provide surface profile ICRI CSP 2 - 5 (ICRI, Des Plaines, IL, Guideline No. 03732.) on smooth troweled slabs with steel shot blasting. Smooth surfaces are not acceptable, they must be roughened.
 - 2. Remove dust, grease and oil with high pressure water blasting.
 - 3. Apply chemical detergent solution ("degreaser").
 - 4. Scrub in chemical solution with stiff-bristled broom or scrubbing machine.
 - 5. Collect and dispose of solution.

6. Repeat process as needed to achieve acceptable results.
7. Repair defective areas such as honeycombs, cracks or other defects with a suitable repairing or manufacturer recommended mortar.
8. Treat saw cut and expansion joints as per manufacturer's application guideline.
9. Carefully rinse all the surfaces to be treated with clean water, leave no standing water.
10. Do not let surface dry out. Surface must be kept wet to prevent oil from raising.

3.3 INSTALLATION

- A. Mix concrete floor sealer material in proportions recommended by manufacturer.
- B. Apply concrete floor sealer material in quantities as per manufacturer's specifications and recommendations to still damp surface.
 1. Apply in one coat for oil contaminated slabs at rate of 100 SF/gal (0.77 kg/m²).
 2. Apply using short nap roller or squeegee to the still moist substrate, and carefully scrub it into the pores with a long handled scrub brush. Follow with a roller to achieve a uniform coverage.
- C. Broadcast clean, dry, fresh water washed and dried #20 silica sand (0.5 to 1.0 mm) to "rejection" (full broadcast) or at a rate of 30 lb/100 SF (1.5 kg/m²) into the fresh concrete floor sealer where a subsequent cement-based leveling course (underlayment) or epoxy based top coating follows.
- D. Where specified install floor covering as per manufacturer's specifications and recommendations.
- E. Note: Water based adhesives under VCT, sheet vinyl, linoleum, rubber backed carpet or other non-breathable flooring systems require a cementitious underlayment on top of the concrete floor sealer for their curing process. Consult adhesive manufacturer for recommended minimum thickness of cementitious underlayment.

3.4 ACCEPTANCE

- A. Remove left over materials and any foreign material resulting from the work from the site.
- B. Clean adjacent surfaces and materials.

END OF SECTION

Project: (01/05)

GUIDE SPECIFICATION
VAPORTIGHT COAT®-SG2

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(410) 392-2300 (800-394-1410)

SECTION 072600
SURFACE APPLIED VAPOR REDUCTION SYSTEMS

or

SECTION 099656
EPOXY MOISTURE MITIGATION SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Furnish all labor, materials, tools and equipment as necessary to perform installation of a surface applied moisture mitigation system (vapor retarder) on new and/or existing concrete slabs as shown on drawings and as specified in this section.
- B. Repairs and preparation of concrete floors.
- C. Related Sections: **(Specifier: Delete or add necessary Sections)**
 - 1. See section 033000 Cast-in-Place Concrete.
 - 2. See section 096200 Specialty Flooring.
 - 3. See section 096300 Masonry Flooring.
 - 4. See section 096400 Wood Flooring.
 - 5. See section 096500 Resilient Flooring.
 - 6. See section 096600 Terrazzo Flooring.
 - 7. See section 096700 Fluid-Applied Flooring.
 - 8. See section 096800 Carpet.

1.2 REFERENCES

- A. ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 1998.
- B. ASTM E 1907 – Standard Practices for Determining Moisture-Related Acceptability of Concrete Floors to Receive Moisture-Sensitive Finishes; 1997.
- C. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials; 1995.
- D. ASTM D 4541 B - Pull-Off Strength of Coatings; 1995, Modified

1.3 SUBMITTALS

- A. General:
Submit manufacturer's certification that proposed materials, details and systems as indicated and specified fully comply with manufacturer's details and specifications. If any portion of Contract Documents do not conform to manufacturer's standard recommendations, submit notification of portions of design that are at variance with manufacturer's specifications.
- B. Product Data:

1. Submit manufacturer's literature, installation instructions and MSDS (Material Safety Data Sheet) for each product.
2. Test data: Submit independent testing laboratory data for product, evidencing:
 - a. up to 95% reduction of water vapor transmission (tested as per ASTM E 96-95).
 - b. product is insensitive to alkaline environment up to pH 14 (tested as per ASTM D 1308).

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 1. Company specializing in manufacturing products specified in this Section with minimum 5 years documented experience.
- B. Installer Qualifications:
 1. Acceptable to manufacturer with documented experience on at least 3 projects of similar nature in past 5 years and/or training provided by the product manufacturer.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store in a dry, well ventilated area at minimum 50 deg F (10 deg C) and maximum 90 deg F (32 deg C).
- B. Deliver materials in manufacturer's unopened containers fully identified with brand, type, grade, class and all other qualifying information. Provide Material Safety Data Sheets for each product.

1.6 SYSTEM REQUIREMENTS

- A. Coordinate floor sealing installation with other trades.
- B. Provide materials and accessories in timely manner so as not to delay Work.

1.7 PROJECT CONDITIONS

- A. Maintain surfaces to be sealed and surrounding air temperature at not less than 50 deg F (10 deg C).
- B. Exercise caution when temperatures exceed 90 deg F (32 deg C).

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Approved Manufacturers: AQUAFIN, Inc. 505 Blue Ball Rd., #160, Elkton, MD, Phone (800) 394-1410 or (410) 392-2300; Fax (410) 392-2324; e-mail info@aquafin.net.
- B. Requests for substitutions will be considered only if submitted to the architect/engineer in writing and must include substantiation of product performance, 10 days prior to the original bid date.

2.2 MATERIALS

- A. Moisture Vapor Emission Reduction Control System (concrete floor sealer): One-part system consisting of a two-component, moisture tolerant, high density, low odor, chemically

enhanced epoxy based product which must reduce vapor emissions (MVER) to 3 lbs/24 hrs*1000 SF or less and be compatible with floor finishes and adhesives approved by the manufacturer. Characteristics:

- | | |
|--|---|
| 1. Product: | VAPORTIGHT COAT®-SG2 |
| 2. Component-A and B: | Precise blend of white and yellowish liquid |
| 3. Compressive Strength: (ASTM D-695) | >11,000 psi (>80 Mpa) |
| 4. Flexural Strength: (ASTM D-790) | >4,000 psi (>27 Mpa) |
| 5. Bond/Adhesion: (ASTM D-4541) | >500 psi (>3.5 Mpa) at 28 days |
| 6. Permeance: (ASTM E-96) | <1.0 perm (<5.7E-08 grams/Pa*s*m ²) |
| 7. Alkaline Resistance: (ASTM D-1308) | up to pH 14 |
| 8. Vapor Reduction: (ASTM E-96) | up to 95% |
| 9. Cured for installation of flooring: | 12 hrs at 73 deg F (23 deg C) |
| 10. pH on cured surface: | 7 |

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine all construction substrates and conditions under which concrete floor sealer material is to be installed. Do not proceed with the concrete floor sealer installation until unsatisfactory conditions are corrected.
- B. Assure that surfaces to be treated do not contain any kind of sealer.
- C. Anhydrous Calcium Chloride Testing as per ASTM F-1869:
 - 1. Before installation of concrete floor sealer: use tests carried out by Architect/Engineer during study phase, and confirm by testing through installer or independent laboratory prior to installation of concrete floor sealer.
 - 2. After installation of concrete floor sealer: not required by manufacturer of specified concrete floor sealer, unless specified during bid stage.

3.2 PREPARATION

- A. Protect adjacent surfaces not designated to receive concrete floor sealer.
- B. Substrate preparation:
 - 1. Remove existing floor coverings, coatings and adhesives down to bare concrete, curing compounds, efflorescence, dust, grease, laitance, etc. with steel shot blasting, abrasive (sand) blasting or grinding using a diamond cup blade. Acid etching is not recommended.
 - 2. Assure that all slabs have surface profile ICRI CSP 3 - 5 (ICRI, Des Plaines, IL, Guideline No. 03732.) for mechanical bond (i.e. medium grit sandpaper). Smooth surfaces are not acceptable, they must be shot blasted.
 - 3. Burn off reinforcing fibers and collect and vacuum remains.
 - 4. Repair defective areas such as honeycombs, cracks or other defects with a suitable repairing or manufacturer recommended mortar.
 - 5. Treat saw cut and expansion joints as per manufacturer's application guideline.
 - 6. Install cementitious underlayment, leveling mortars, flash patching, on top of surface applied concrete floor sealer.

7. Carefully rinse or pre-dampen several times all the surfaces to be treated with clean water, leave no standing water.

3.3 INSTALLATION

- A. Mix concrete floor sealer material in proportions recommended by manufacturer.
- B. Apply concrete floor sealer material in quantities as per manufacturer's specifications and recommendations.
 1. Apply in one coat at specified rate for moisture vapor emission rate (MVER) up to 25 lbs/24 hrs*1000 SF ($<5.0 \text{ g/hr/m}^2$).
 2. Apply using roller or squeegee to the still moist substrate, and carefully scrub it into the pores with a long handled scrub brush. Follow with a roller to achieve a uniform coverage.
- C. Immediately broadcast clean, dry, fresh water washed and dried #20 silica sand (0.5 to 1.0 mm) to "rejection" (full broadcast) or at a rate of up to 30 lb/100 SF (1.5 kg/m^2) into the fresh concrete floor sealer where a 2nd coat or subsequent top coating such as epoxy, epoxy terrazzo, cement-based topping, underlayment, polyurea, polyurethane, etc., follows.
- E. Where specified install leveling course as per manufacturer's specifications and recommendations.
- F. Where specified install floor covering as per manufacturer's specifications and recommendations.
- G. Note:
 1. Water based adhesives under VCT, sheet vinyl, linoleum, rubber backed carpet or other non-breathable flooring systems require a cementitious underlayment on top of the concrete floor sealer for their curing process. Consult adhesive manufacturer for recommended minimum thickness of cementitious underlayment.
 2. Pressure sensitive adhesives installed directly over broadcasted concrete floor sealer require a longer "tack" time than listed on manufacturer's literature to prevent adhesive moisture entrapment.

3.4 ACCEPTANCE

- A. Remove left over materials and any foreign material resulting from the work from the site.
- B. Clean adjacent surfaces and materials.

END OF SECTION

Project: (06/06)

MIXING & APPLICATION SEQUENCE

VAPORTIGHT COAT®-SG2 is supplied in a 2.1 gal kit



1. Cut plastic seal and remove safety metal ring.



2. Pierce a hole through the top (rubber membrane) and the bottom of Part B.



3. Completely drain Part B (hardener) into Part A (resin).



4. Mix for approx. 5 minutes. Use complete kit in the proportions supplied. (Do not alter proportions.)



5. Pour mixed material into a clean container.



6. Carefully mix once more for approx. 30 seconds.



7. Pour appropriate amount of material onto slab and spread evenly with a roller or squeegee.



8. Carefully scrub SG2 into the pores with a long handled broom or scrub brush.



9. Follow with a roller to achieve a uniform coverage.



10. Immediately broadcast sand to rejection (full broadcast) on top of fresh SG2.

Date prepared: JANUARY 2006

Date revised: JANUARY 2019

SDS No 5.1.1.A1

Section 1 – Product Identification

IDENTITY: Product Name: **VAPORTIGHT COAT®-SG2** (SDS 1 of 2)
Chemical Characterization: EPOXY RESIN (IRRITANT) **"COMPONENT-A"**

AQUAFIN, INC.
505 BLUE BALL RD., NO. 160
ELKTON, MD 21921

24 hr Emergency Phone: Chem-Tel (800) 255-3924
Information Phone No: (410) 392-2300
info@aquafin.net www.aquafin.net

Recommended use of the chemical and restriction on use: Refer to the product technical data sheet.
For industrial and professional users.

Section 2 – Hazards Identification

GHS Classification:

Skin irritation, Category 2
Skin sensitization, Category 1
Eye irritation, Category 2A
Harmful to aquatic life, Category 3

H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.
H412: Harmful to aquatic life with long lasting effects.

GHS Label element:

Hazard Pictograms



GHS07

Signal Word: Warning

Hazard Statements:

H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.
H412: Harmful to aquatic life with long lasting effects.

Precautionary Statements:

Prevention:

P102: Keep out of reach of children.
P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
P264: Wash skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P281: Use protective equipment as required.

Response:

P301 + P315: IF SWALLOWED: Get immediate medical advice/attention.
P302 + P352: IF ON SKIN: Wash with plenty of water.
P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313 IF exposed or concerned, get medical advice/attention.
P332 + P313: IF skin irritation occurs, get medical advice/attention.
P362: Take off contaminated clothing and wash before reuse.

Storage:

P403 + P232: Store in a well-ventilated place. Protect from moisture.

Disposal:

P501: Dispose of contents/container to an approved waste disposal site.
P502: Refer to manufacturer/supplier for information on recovery/recycling.

Section 3 – Composition / Information on Hazardous Ingredients

Description: Solvent-free preparation based on bisphenol-A-epichlorhydrin resin molecular weight ≤700.

COMPONENTS	CAS NUMBER	OSHA PEL	ACGIH TLV	WEIGHT %
bisphenol-A-(epichlorhydrin) epoxy resin	25068-38-6	Not Estab.	Not Estab.	10-25%
1,6-bis(2,3-ethoxypropoxy)hexane	16096-31-4	Not Estab.	Not Estab.	10-25%
Titanium dioxide	13463-67-7	Not Estab.	Not Estab.	2.5-10%
Solvent naphta (petroleum), light arom.	64742-95-6	Not Estab.	Not Estab.	<1%

Note: There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Section 4 – First Aid Measures

After Inhalation: Remove subject to fresh air. Administer oxygen if difficulty with breathing. Consult a physician.

After Ingestion: Immediately seek medical attention. Do not induce vomiting. Drink plenty of water to dilute stomach contents.

After Skin Contact: Instantly wash skin with plenty of soap and water for at least 15 minutes. Wash clothing before reuse.

After Eye Contact: Rinse opened eye with plenty of running water for at least 15 minutes, lifting upper and lower eyelids occasionally. Remove contact lenses. Consult physician.

Section 5 – Fire Fighting Measures

Extinguishing Media: Carbon dioxide (CO₂), extinguishing powder, water fog.
Do not use full water jet.

Special Fire Fighting Procedures: As in any fire, wear full protective gear and NIOSH-approved self-contained breathing apparatus with full face-piece operated in the pressure demand or other positive pressure mode.

Unusual Fire and Explosion Hazards: Bursting and explosion of container possible due to increase of pressure when exposed to increasing heat. In case of fire, cool nearby containers with water fog.

Section 6 – Accidental Release Measures

Person-related Safety Precautions: Provide plenty of fresh air. Avoid eye and skin contact. Avoid inhalation of vapors. Wear personal protective equipment. Remove or eliminate all

ignition sources. Emergency procedures are not required.

Methods for Cleaning up: Contain and collect spillage with non-combustible, absorbent materials. I.e. sand, earth, vermiculate, diatomaceous earth, universal binders, sawdust and place in container for disposal.

Waste Disposal Method: Dispose in accordance with local, state and federal regulations.

Ecological Information: Do not allow product to reach ground water, bodies of water, or storm water or sewage systems.

Section 7 – Handling and Storage

Handling: Avoid eye and skin contact. Keep out of reach of children.

Storage: Store in a cool, dry enclosed area off the ground in tightly closed containers. No special measures required against explosion and fires. Store away from foodstuffs. Provide fresh air when handling in closed rooms (open windows and doors).

Section 8 – Exposure Controls / Personal Protection

Engineering Controls: Use with adequate general and local exhaust ventilation. Washing of the skin in the working area must be possible. Eye-wash station or bottle must be available.

Respiratory Protection: Respirator in well ventilated areas not necessary. Wear a properly fitted NIOSH approved respirator in poorly ventilated areas.

Skin Protection: When installing, wear appropriate protective rubber or plastic gloves to prevent hand-skin exposure. Wear appropriate impervious clothing to prevent skin exposure (long sleeve shirt and long pants).

Eye Protection: Wear tightly sealed safety glasses with side shields or goggles. Face shield as necessary.

Work/Hygienic Practices: Wash hands before breaks and after work, and before eating, drinking or smoking.

Section 9 – Physical and Chemical Properties

Physical State:	Liquid
Appearance/Color:	White
Odor:	Weak, characteristic
Solubility in water:	Not miscible or difficult to mix
Flash Point:	>100°C (>212°F)
Flammability:	Does not self-ignite
Explosion:	Does not explode
Boiling Point:	Not determined
Melting Point:	Not determined
Bulk Density:	1.98 kg/dm ³ at 20°C (68°F)
Viscosity: (dynamic)	16000 cps (mPas) at 20°C (68°F)
pH-value:	10 at 20°C (68°F)
VOC Concentration:	0 g/l

Section 10 – Stability and Reactivity

- Chemical Stability:** Stable under normal conditions.
- Conditions to Avoid:** Keep away from heat, ignition sources and incompatible materials.
- Hazardous Decomposition:** Dangerous emissions of various decomposition products can be formed when exposed to heat.
- Incompatibilities:** Avoid contact with acids and oxidizers.

Section 11 – Toxicological Information

Acute Toxicity:

13462-86-7 Barytmehl N

Oral LD50 >15000 mg/kg (rat)

25068-38-6 bisphenol-A (epichlorhydrin) epoxy resin with average molecular weight = 700

Oral LD50 >5000 mg/kg (rat)

Dermal LD50 >2000 mg/kg (rat)

16096-31-4 1,6-bis(2,3-ethoxypropoxy)hexane

Oral LD50 2,900 mg/kg (rat)

Dermal LD50 1.400 mg/kg (rabbit)

Inhalation LC50/4 h >100 mg/l (mouse)

64742-95-6 Solvent naphta (petroleum), light arom.

Oral LD50 >2000 mg/kg (rat)

Dermal LD50 >2000 mg/kg (rabbit)

Inhalation LC50/4 h >5 mg/l (rat)

Primary Irritation:

- **Skin:** irritates skin and mucous membrane.
- **Eyes:** irritating
- **Sensibility:** sensibility through contact with skin possible.

Section 12 – Ecological Information

Aquatic Toxicity:

25068-38-6 bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight = 700)

EC50 (24 h) 3.6 mg/l (Daphnia magna)

LC50 (96 h) 1.5 mg/l (Rainbow trout)

64742-95-6 Solvent naphta (petroleum), light arom.

LC/EC/IC 50 1-10 mg/l (Algae toxicity)

1-10 mg/l (Daphnia (acute) toxicity))

Persistence and Degradability:

25068-38-6 bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight = 700)

301B (Mod. Sturm) 12% (-)

Bioaccumulative potential: No further relevant information available.

Mobility in soil: No further relevant information available.

Remark: Toxic for fish. Do not allow product or large quantities to reach into waterways or drains.

General notes: Water hazard class 2 (Self-assessment): hazardous for water.
Do not allow product to reach ground water, bodies of water, or storm water or sewage systems.

Section 13 – Disposal Considerations

- Waste Disposal Method:** Dispose of in a manner consistent with federal, state and local regulations. This includes pails containing uncured material. Pails with cured/hardened remains of product can be sent for recycling.
- Recommendation:** Product mixed with hardener and fully cured is ecologically safe and can be disposed of local refuse deposit or recycling facility.

Section 14 – Transport Information

- USDOT (Domestic Surface):** UN 3082 Not regulated.
- IATA/ICAO (Air):** UN 3082 Environmentally hazardous substances, liquid, NOS, (bisphenol A-epichlorhydrin); epoxy resin (number average molecular weight<700) 9, PG III
- IMDG (Ocean):** UN 3082 Environmentally hazardous substances, liquid, NOS, (bisphenol A-epichlorhydrin), (Marine pollutant); epoxy resin (number average molecular weight<700) 9, PG III

Section 15 – Regulatory Information

All raw materials are on the U.S., EPA, TSCA Inventory.

SARA Notification: Nothing in this product is subject to regulation under SARA 302, 313. It may be subject to SARA 312 reporting, depending upon the purchaser's storage circumstances.

CERCLA: No CERCLA chemicals exist in this product above reportable concentrations.

Clean Air Act

Ozone-Depletion Potential: This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section (40 CFR 61).

Section 16 – Other Information

(Hazard Rating: 0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe; * = Chronic)

HMIS III rating:

Health: 2* Flammability: 1 Physical hazard: 1

Abbreviations and acronyms:

- USDOT: United States Department of Transportation.
IMDG: International Maritime Code for Dangerous Goods.
IATA: International Air Transport Association.
CAS: Chemical Abstracts Service (Division of the American Chemical Society).
LC50: Lethal concentration, 50 percent.
LD50: Lethal dose, 50 percent.
EC50: Median effective concentration.
RQ: Reportable quantity.

SDS prepared by: Aquafin product safety department.

DISCLAIMER:

We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind, expressed or implied, and we assume no responsibility for any loss, damage, or expense, direct or consequential, arising out of their use. Aquafin shall not be responsible for the use of this product in a manner to infringe on any patent or any other intellectual property rights held by others. User is responsible for determining appropriate safety measures and for applying the legislation covering his own activities. We recommend that user makes tests to determine the suitability of a product for its particular purpose prior to use.

END OF SDS

(January 22, 2019)

Date prepared: JANUARY 2006
Date revised: JANUARY 2019

SDS No 5.1.1.B1

Section 1 – Product Identification

IDENTITY: Product Name: **VAPORTIGHT COAT[®]-SG2** (SDS 2 of 2)
Chemical Characterization: EPOXY HARDENER (CORROSIVE) **“COMPONENT-B”**

AQUAFIN, INC.
505 BLUE BALL RD., NO. 160
ELKTON, MD 21921

24 hr Emergency Phone: Chem-Tel (800) 255-3924
Information Phone No: (410) 392-2300
info@aquafin.net www.aquafin.net

Recommended use of the chemical and restriction on use: Refer to the product technical data sheet.
For industrial and professional users.

Section 2 – Hazards Identification

GHS Classification:

Flammable liquids, Category 4
Aspiration hazard, Category 1
Skin corrosion/irritation, Category 1B
Sensitization, Skin, Category 1
Eye damage, Category 1
Harmful to aquatic life, Category 3

H227: Combustible liquid.
H304: May be fatal if swallowed and enters airways
H314: Causes severe skin burns and eye damage.
H317: May cause an allergic skin reaction.
H318: Causes serious eye damage.
H412: Harmful to aquatic life with long lasting effects.

GHS Label element:

Hazard Pictograms



GHS05



GHS07



GHS08

Signal Word: Danger

Hazard Statements:

H304: May be fatal if swallowed and enters airways
H314: Causes severe skin burns and eye damage.
H317: May cause an allergic skin reaction.
H318: Causes serious eye damage.
H412: Harmful to aquatic life with long lasting effects.
H227: Combustible liquid.

Precautionary Statements:

Prevention:

P102: Keep out of reach of children.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P264: Wash skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P272: Contaminated work clothing should not be allowed out of the workplace.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P281: Use protective equipment as required.

Response:

P301 + P315: IF SWALLOWED: Get immediate medical advice/attention.
P301 + P330 + P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P302 + P352 = P361: IF ON SKIN: Remove/Take off immediately all contaminated clothing. Wash with plenty of water.

P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313: IF IN EYES: If exposed or concerned, get medical advice/attention.

P332 + P313: IF skin irritation occurs, get medical advice/attention.

P362: Take off contaminated clothing and wash before reuse.

Storage:

P403 + P235: Store in a well-ventilated place. Keep cool.

P405: Store locked up.

Disposal:

P501: Dispose of contents/container to an approved waste disposal site.

P502: Refer to manufacturer/supplier for information on recovery/recycling.

Section 3 – Composition / Information on Hazardous Ingredients

Description: Modified cycloaliphatic polyamine.

COMPONENTS	CAS NUMBER	WEIGHT
3-aminomethyl-3,5,5-trimethylcyclohexylamine	2855-13-2	50-100%
Naphtha (petroleum), hydrotreated heavy	64742-48-9	25-50%
2,4,6-tris-(dimethylaminomethyl)phenol	90-72-2	2.5-10%
Bis(dimethylaminomethyl)phenol	71074-89-0	<2.5%

Note: There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Section 4 – First Aid Measures

General Advise: Immediately remove contaminated clothing. Exposure symptoms can appear after several hours. If contaminated, consult medical advice up to 48 hours after exposure.

First Aid: Wear protective equipment (i.e. protective gloves).

If victim is unconscious: position and transport in “stable sideways position” to prevent asphyxiation if vomiting. Keep air passages open, remove dentures and vomit. Control breathing and pulse. If breathing and heart activity stops, administer CPR and call immediately emergency services.

After Inhalation: Remove subject to fresh air. Administer oxygen if difficulty with breathing. Consult a physician.

After Ingestion: Immediately seek medical attention. Do not induce vomiting. Drink plenty of water to dilute stomach contents.

After Skin Contact: Do not use thinners or other solvents. Instantly wash skin with plenty of soap and cold water for at least 15 minutes. Remove affected clothes instantly. Wash clothing before reuse.

After Eye Contact: Rinse opened eye with plenty of running water for at least 15 minutes, lifting upper and lower eyelids occasionally. Remove contact lenses. Consult physician.

Section 5 – Fire Fighting Measures

- Auto-ignition:** Product is not self-igniting and not explosive.
- Extinguishing Media:** Carbon dioxide (CO₂), extinguishing powder, foam, water spray. Do not use full water jet.
- Special Fire Fighting Procedures:** As in any fire, wear full protective gear and NIOSH-approved self-contained breathing apparatus with full face-piece operated in the pressure demand or other positive pressure mode.
- Unusual Fire and Explosion Hazards:** Bursting and explosion of container possible due to increase of pressure when exposed to increasing heat. In case of fire, cool nearby containers with water fog. Formation of poisonous gases during heating or in fires possible.

Section 6 – Accidental Release Measures

- Person-related Safety Precautions:** Provide plenty of fresh air. Avoid eye and skin contact. Avoid inhalation of vapors. Wear personal protective equipment. Remove or eliminate all ignition sources.
- Methods for Cleaning up:** Contain and collect spillage with non-combustible, absorbent materials. I.e. sand, earth, vermiculate, diatomaceous earth, universal binders, sawdust and place in container for disposal.
- Waste Disposal Method:** Dispose in accordance with local, state and federal regulations.
- Ecological Information:** Do not allow product to reach ground water, bodies of water, storm water or sewage systems.

Section 7 – Handling and Storage

- Handling:** Avoid eye and skin contact. Keep out of reach of children.
- Storage:** Store in a cool, dry enclosed area off the ground in tightly closed containers. No special measures required against explosion and fires. Store away from foodstuffs. Provide fresh air when handling in closed rooms (open windows and doors).

Section 8 – Exposure Controls / Personal Protection

- Engineering Controls:** Use with adequate general and local exhaust ventilation. Washing of the skin in the working area must be possible. Eye-wash station or bottle must be available.
- Respiratory Protection:** Respirator in well ventilated areas not necessary. Wear a properly fitted NIOSH approved respirator in poorly ventilated areas or spillage.
- Skin Protection:** When installing, wear appropriate impervious gloves (neoprene) to prevent hand-skin exposure. Wear appropriate impervious clothing to prevent skin exposure (long sleeve shirt and long pants).
- Eye Protection:** Wear chemical splash goggles. Face shield as necessary.
- Work/Hygienic Practices:** Wash hands before breaks and after work, and before eating, drinking or smoking. Know the locations of eye wash fountains and emergency showers.

Section 9 – Physical and Chemical Properties

Physical State:	Liquid
Appearance/Color:	Yellowish
Odor:	Amine like
Solubility in water:	Not or slightly miscible
Flash Point:	77° C (170 °F).
Flammability:	Product is not self-igniting
Danger of explosion:	Product is not explosive
Boiling Point:	Not determined
Melting Point:	Not determined
Boiling Point:	N/A
Melting Point:	N/A
Bulk Density:	0.88 g/cm ³ at 20°C (68°F)
Viscosity: (dynamic)	Not determined
pH:	14 at 20°C (68°F)
Viscosity: (dynamic)	24 cps (mPas) at 20°C (68°F)
VOC content:	< 50 g/l (A+B Combined)

Section 10 – Stability and Reactivity

Chemical Stability:	Stable under normal conditions.
Conditions to Avoid:	Keep away from heat, sparks and ignition sources.
Hazardous Decomposition:	Carbon monoxide, carbon dioxide, hydrocarbon fragments. Possibility of flammable mixtures in the air, if product heats above flash point and/or spraying or fogging.
Incompatibilities:	Strong oxidizing agents.

Section 11 – Toxicological Information

Acute Toxicity:

<u>2855-13-2</u>	<u>3-aminomethyl-3,5,5-trimethylcyclohexylamine</u>
Oral	LD50 1030 mg/kg (rat)
Dermal	LD50 1840 mg/kg (rabbit)

<u>64742-48-9</u>	<u>Naphtha (petroleum), hydrotreated heavy</u>
Oral	LD50 >2000 mg/kg (rat)
Dermal	LD50 >2000 mg/kg (rabbit)
Inhalation	LC50 >5 mg/l (rat)

Primary Irritation:

- **Skin:** corrosive on skin and mucous membrane.
- **Eyes:** strong corrosive reaction.
- **Sensibility:** sensibility through contact with skin possible.

Additional Information:	if ingested, highly corrosive to mouth and throat, as well as danger of perforation to esophagus and stomach.
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Section 12 – Ecological Information

Aquatic Toxicity:

<u>2855-13-2</u>	<u>3-aminomethyl-3,5,5-trimethylcyclohexylamine</u>
EC10	18 h/ 1120 mg/l (Pseudomas putida)

EC50 >50 mg/l (Algae toxicity)
EC50 48 h/ 23 mg/l (Daphnia magna)
LC50 96 h/ 110 mg/l (Brachydanio rerio)

Bioaccumulative potential: No further relevant information available.

Mobility in soil: No further relevant information available.

Remark: Toxic for fish. Do not allow product or large quantities to reach into waterways or drains.

General notes: Water hazard class 2 (Self-assessment): hazardous for water.
Do not allow product to reach ground water, bodies of water, or storm water or sewage systems.

Section 13 – Disposal Considerations

Waste Disposal Method: Dispose of in a manner consistent with federal, state and local regulations. This includes pails containing uncured material. Pails with cured/hardened remains of product can be sent for recycling.

Recommendation: Product mixed with resin and fully cured is ecologically safe and can be disposed to local refuse deposit or recycling facility.

Section 14 – Transport Information

USDOT (Domestic Surface): UN 2735 Amines, liquid, corrosive, NOS, (Isophoronediamine) 8, PG III

IATA/ICAO (Air): UN 2735 Amines, liquid, corrosive, NOS, (Isophoronediamine) 8, PG III.

IMDG (Ocean): UN 2735 Amines, liquid, corrosive, NOS, (Isophoronediamine), Marine pollutant, 8, PG III

Section 15 – Regulatory Information

All raw materials are on the U.S., EPA, TSCA Inventory.

SARA Notification: Nothing in this product is subject to regulation under SARA 302, 313. It may be subject to SARA 312 reporting, depending upon the purchaser's storage circumstances.

CERCLA: No CERCLA chemicals exist in this product above reportable concentrations.

Clean Air Act

Ozone-Depletion Potential: This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section (40 CFR 61).

Section 16 – Other Information

(Hazard Rating: 0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe; * = Chronic)

HMIS III rating:

Health: 3* Flammability: 0 Physical hazard: 1

Abbreviations and acronyms:

USDOT: United States Department of Transportation.
IMDG: International Maritime Code for Dangerous Goods.
IATA: International Air Transport Association.
CAS: Chemical Abstracts Service (Division of the American Chemical Society).
LC50: Lethal concentration, 50 percent.
LD50: Lethal dose, 50 percent.
EC50: Median effective concentration.
RQ: Reportable quantity.

SDS prepared by: Aquafin product safety department.

DISCLAIMER:

We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind, expressed or implied, and we assume no responsibility for any loss, damage, or expense, direct or consequential, arising out of their use. Aquafin shall not be responsible for the use of this product in a manner to infringe on any patent or any other intellectual property rights held by others.

User is responsible for determining appropriate safety measures and for applying the legislation covering his own activities. We recommend that user makes tests to determine the suitability of a product for its particular purpose prior to use.

END OF SDS

(January 22, 2019)

Date prepared: **AUGUST 2012**
Date revised: **JANUARY 2019**

SDS No. 5.1.4.C1

Section 1 – Product Identification

IDENTITY: As Used on Label and List: **VAPORTIGHT COAT[®]-SG2/3-ACCELERATOR**
(SDS 1 of 1)
Chemical Characterization: EPOXY ACCELERATOR (CORROSIVE) “**COMPONENT-C**”
(Curing Agent for AQUAFIN-SG2 and SG3)

AQUAFIN, INC.
BLUE BALL RD NO. 160
ELKTON, MD 21921

24 hr Emergency Phone: Chem-Tel (800) 255-3924
Information Phone No: (410) 392-2300
info@aquafin.net

Recommended use of the chemical and restriction on use: Refer to the product technical data sheet.
For industrial and professional users.

Section 2 – Hazards Identification

OSHA/HCS status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

GHS Classification:

Acute toxicity, Category 4 (oral)	H302: Harmful if swallowed.
Skin corrosion/irritation, Category 1B	H314: Causes severe skin burns and eye damage.
Skin sensitization, Category 1	H317: May cause an allergic skin reaction.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Reproductive toxicity, Category 2	H361: Suspected of damaging fertility or the unborn child.

GHS Label element:

Hazard Pictograms



GHS05



GHS07



GHS08

Signal Word: **Danger**

Hazard Statements:

H302:	Harmful if swallowed.
H314:	Causes severe skin burns and eye damage.
H317:	May cause an allergic skin reaction.
H318:	Causes serious eye damage.
H361:	Suspected of damaging fertility or the unborn child.

Precautionary Statements:

Prevention:

P102:	Keep out of reach of children.
P260:	Do not breathe dust/fume/gas/mist/vapors/spray.
P264:	Wash skin thoroughly after handling.
P270:	Do not eat, drink or smoke when using this product.
P280:	Wear protective gloves/protective clothing/eye protection/face protection.
P272:	Contaminated work clothing should not be allowed out of the workplace.
P281:	Use protective equipment as required.

Response:

P301 + P315: IF SWALLOWED: Get immediate medical advice/attention.

P330 + P331:	Rinse mouth. Do NOT induce vomiting.
P302 + P352 = P361:	IF ON SKIN: Remove/Take off immediately all contaminated clothing. Wash with plenty of water.
P304 + P340:	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338:	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned, get medical advice/attention.
P332 + P313:	IF skin irritation occurs, get medical advice/attention.
P362:	Take off contaminated clothing and wash before reuse.

Storage:

P403:	Store in a well-ventilated place.
P405:	Store locked up.

Disposal:

P501:	Dispose of contents/container to an approved waste disposal site.
P502:	Refer to manufacturer/supplier for information on recovery/recycling.

Section 3 – Composition / Information on Ingredients

Substance: Mixture.

HAZARDOUS COMPONENTS	CAS NUMBER	WEIGHT
2,4,6-tris-(dimethylaminomethyl)phenol	90-72-2	60 - 100%
bis[(dimethylamino)methyl]phenol	71074-89-0	13 - 30

Section 4 – First Aid Measures

General Advise:	Immediately remove contaminated clothing. Exposure symptoms can appear after several hours. If contaminated consult medical advise up to 48 hours after exposure. <u>First Aid:</u> Wear protective equipment (i.e. protective gloves). <u>If victim is unconscious:</u> position and transport in “stable sideways position” to prevent asphyxiation if vomiting. Keep air passages open, remove dentures and vomit. Control breathing and pulse. If breathing and heart activity stops, administer CPR and call immediately emergency services.
After Inhalation:	Remove subject to fresh air. Administer oxygen if difficulty with breathing. Consult a physician immediately. The exposed person may need to be kept under medical surveillance for 48 hours.
After Ingestion:	Immediately seek medical attention. Do not induce vomiting. Drink plenty of water to dilute stomach contents. Stop if the exposed person feels sick as vomiting may be dangerous.
After Skin Contact:	Instantly wash skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately. Chemical burns must be treated promptly by a physician.
After Eye Contact:	Rinse opened eye with plenty of running water for at least 15 minutes, lifting upper and lower eyelids occasionally. Remove contact lenses. Chemical burns must be treated promptly by a physician. Consult physician immediately.
Protection of First Aid Personnel:	If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
Notes to Physician:	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The

exposed person may need to be kept under medical surveillance for 48 hours.

Section 5 – Fire Fighting Measures

- Flash Point:** Closed cup: 110 - 120° C (230 - 248 ° F). [DIN 51758; EN 22719 (Pensky-Martens Closed Cup)].
- Flammability:** In a fire or heated, a pressure increase will occur and the container may burst.
- Hazardous Thermal Decomposition Products:** Decomposition products may include the following materials: Carbon dioxide; carbon monoxide; nitrogen oxides.
- Extinguishing Media:** **Suitable** Use an extinguishing agent suitable for the surrounding fire.
Not suitable None known.
- Special Fire Fighting Procedures:** As in any fire, wear full protective gear and NIOSH-approved self-contained breathing apparatus with full face-piece operated in the pressure demand or other positive pressure mode.
- Unusual Fire and Explosion Hazards:** Bursting and explosion of container possible due to increase of pressure when exposed to increasing heat. In case of fire, cool nearby containers with water fog.
Formation of poisonous gases during heating or in fires possible.

Section 6 – Accidental Release Measures

- Personal Precautions:** Provide plenty of fresh air. Avoid eye and skin contact. Avoid inhalation of vapors. Wear appropriate personal protective equipment. Remove or eliminate all ignition sources. Do not touch or walk through spilled material.
- Methods for Cleaning up:** Stop leak if without risk. Move containers from spill area. Approach release from upwind. Contain and collect spillage with non-combustible, absorbent materials. I.e. sand, earth, vermiculate, diatomaceous earth, universal binders, sawdust and place in container for disposal.
- Waste Disposal Method:** Dispose in accordance with local, state and federal regulations.
- Ecological Information:** Do not allow product to reach ground water, bodies of water, storm water or sewage systems. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Section 7 – Handling and Storage

- Handling:** Avoid eye and skin contact. Keep out of reach of children. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage:** Storage temperature: 2 - 40° C (35 - 104° F). Store in original container protected from direct sunlight in a dry, cool and well ventilated area in tightly closed containers. Store away from foodstuffs. Provide fresh air when handling in closed rooms (open windows and doors). Do not store in unlabeled containers. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers.

Section 8 – Exposure Controls / Personal Protection

- Engineering Controls:** Use only with adequate general and local exhaust ventilation.

	Washing of the skin in the working area must be possible. Eye-wash station or bottle must be available.
Respiratory Protection:	Respirator in well ventilated areas not necessary. Wear a properly fitted NIOSH approved respirator in poorly ventilated areas or spillage.
Skin Protection:	When installing, wear appropriate impervious gloves (neoprene) to prevent hand-skin exposure. Wear appropriate impervious clothing (acid and alkaline resistant) to prevent skin exposure (long sleeve shirt and long pants).
Hand Protection:	Chemical-resistant, impervious gloves complying with an approve standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Material of gloves for long term application (BTT>480 min): <ul style="list-style-type: none"> - butyl rubber - ethyl vinyl alcohol laminate (EVAL) - gauntlet type. Material of gloves for short term/splash application (10 min<BTT<480 min): <ul style="list-style-type: none"> - nitrile rubber - gauntlet type.
Eye Protection:	Wear chemical splash goggles. Face shield as necessary.
Work/Hygienic Practices:	Wash hands before breaks and after work, and before eating, drinking or smoking. Know the locations of eye wash fountains and emergency showers.

Section 09 – Physical and Chemical Properties

Physical State:	Liquid
Appearance/Color:	Light yellow
Odor:	Amine like
Solubility in water:	Soluble
Boiling Point:	N/A
Melting Point:	N/A
Flash Point:	Closed cup: 110 - 120° C (230 - 248 ° F). [DIN 51758; EN 22719 (Pensky-Martens Closed Cup)]
Vapor Pressure:	Less than 1 Pa at 20°C (68°F)
Bulk Density:	0.97 kg/dm ³ at 20°C (68°F)
Evaporation Rate:	N/A
pH:	11
Viscosity: (room temperature)	120 – 250 mPa*s (120 – 250 cPs)
VOC:	0% (0 g/L)

Section 10 – Stability and Reactivity

Chemical Stability:	The product is stable. Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to Avoid:	Strong oxidizer. Keep away from heat and ignition sources.
Materials to avoid:	Strong acids, strong bases, strong oxidizing agents.
Hazardous Decomposition:	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Decomposition products may include the following materials: nitrogen oxides, carbon monoxide, other organic compounds.

Section 11 – Toxicological Information

Acute Toxicity:

2,4,6-tris((dimethylaminomethyl)phenol):

Oral	LD50	2169 mg/kg (rat-female)
Dermal	LD50	>971 mg/kg (rat-male)

Irritation/Corrosion:

2,4,6-tris((dimethylaminomethyl)phenol):

Dermal	Skin	Corrosive (rabbit)
	Eyes	Corrosive (rabbit)

Bis((dimethylamino)methyl)phenol:

Dermal	Skin	Irritant (rabbit)
	Eyes	Irritant (rabbit)

Potential Acute Health Effects:

- **Inhalation:** May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.
- **Ingestion:** Harmful if swallowed. May cause burns to mouth, throat and stomach.
- **Skin:** Causes severe burns..
- **Eyes:** Causes serious eye damage.

Additional Information: If ingested, highly corrosive to mouth and throat, as well as danger or perforation to esophagus and stomach.

Section 12 – Ecological Information

Environment: Toxic to aquatic systems. Do not allow product to reach into natural waterways, drains, storm water or wastewater systems.

Section 13 – Disposal Considerations

Waste Disposal Method: Dispose of in a manner consistent with federal, state and local regulations. This includes pails containing uncured material. Pails with cured/hardened remains of product can be sent for recycling.

Recommendation: Product mixed with hardener and resin and fully cured is ecologically save and can be disposed to local refuse deposit.

Section 14 – Transport Information

DOT (Domestic Surface & Air): UN 2735 Polyamines, liquid, corrosive, N.O.S.
(2,4,6-Tris(Dimethylaminomethyl)Phenol) 8, PG II

IMO (Ocean): UN 2735 Polyamines, liquid, corrosive, N.O.S.
(2,4,6-Tris(Dimethylaminomethyl)Phenol) 8, PG II

IATA/ICAO (Air): UN 2735 Polyamines, liquid, corrosive, N.O.S.
(2,4,6-Tris(Dimethylaminomethyl)Phenol) 8, PG II

Section 15 – Regulatory Information

U.S. Federal Regulations

HCS Classification: Corrosive material.**U.S. Federal Regulations:** **U.S. Inventory (TSCA 8b):** All components are listed or exempted.**SARA Notification:** **SARA 302/304/311/312:** Immediate (acute) health hazard.
Delayed (chronic) health hazard.**SARA 311/312 SDS distribution – chemical inventory – hazard identification:**
No ingredient listed.**Clean Air Act – Ozone Depleting Substances (ODS):** This product does not contain nor is it manufactured with ozone depleting substances.**State Regulations:** **Massachusetts, New Jersey & Pennsylvania RTK Hazardous Substances:**
No ingredients listed.
California Prop 65: None required.**Canada:****WHMIS (Canada):** Class D-2B: Material causing other toxic effects (Toxic).**CEPA DSL:** This material is listed or exempted.**Section 16 – Other Information**

(Hazard Rating: 0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe; * = Chronic)

HMIS III rating:

Health: 3 Flammability: 1 Physical hazard: 0 Personal Protection: B

Abbreviations and acronyms:

USDOT: United States Department of Transportation.
IMDG: International Maritime Code for Dangerous Goods.
IATA: International Air Transport Association.
CAS: Chemical Abstracts Service (Division of the American Chemical Society).
LC50: Lethal concentration, 50 percent.
LD50: Lethal dose, 50 percent.
EC50: Median effective concentration.
RQ: Reportable quantity.

SDS prepared by: Aquafin product safety department.**DISCLAIMER:**

We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind, expressed or implied, and we assume no responsibility for any loss, damage, or expense, direct or consequential, arising out of their use. Aquafin shall not be responsible for the use of this product in a manner to infringe on any patent or any other intellectual property rights held by others.

User is responsible for determining appropriate safety measures and for applying the legislation covering his own activities. We recommend that user makes tests to determine the suitability of a product for its particular purpose prior to use.

END OF SDS

(January 22, 2019)



APPENDIX E: MANUFACTURER-SUPPLIED INFORMATION, STEGO DRAGO WRAP AND SEALANT OR EQUIVALENT

DRAFT



DRAGO[®] WRAP

VAPOR INTRUSION BARRIER

INSTALLATION INSTRUCTIONS

Engineered protection to create a healthy built environment.

DRAGO® WRAP VAPOR INTRUSION BARRIER INSTALLATION INSTRUCTIONS

IMPORTANT: Please read these installation instructions completely, prior to beginning any Drago Wrap installation. The following installation instructions are generally based on ASTM E1643 – *Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs*. There are specific instructions in this document that go beyond what is stated in ASTM E1643 to take into account vapor intrusion mitigation. If project specifications call for compliance with ASTM E1643, then be sure to review the specific installation sections outlined in the standard along with the techniques referenced in these instructions.

UNDER-SLAB INSTRUCTIONS:

1. Drago Wrap has been engineered to be installed over a tamped aggregate, sand, or earth base. It is not typically necessary to have a cushion layer or sand base, as Drago Wrap is tough enough to withstand rugged construction environments.

NOTE: Drago Wrap must be installed with the gray facing the subgrade.

Fig.1: UNDER-SLAB INSTALLATION



2. Unroll Drago Wrap over the area where the slab is to be placed. Drago Wrap should completely cover the concrete placement area. All joints/seams should be overlapped a minimum of 12 inches and taped using Drago® Tape. (Fig. 1). If additional protection is needed, install DragoTack™ Tape in between the overlapped seam in combination with Drago Tape on top of the seam.

NOTE: The area of adhesion should be free from dust, dirt, moisture, and frost to allow maximum adhesion of the pressure-sensitive tape. Ensure that all seams are taped with applied pressure to allow for maximum and continuous adhesion of the pressure-sensitive Drago Tape. Adhesives should be installed above 40°F. In temperatures below 40°F, take extra care to remove moisture/frost from the area of adhesion.

3. ASTM E1643 requires sealing the perimeter of the slab. Extend vapor retarder over footings and seal to foundation wall or grade beam at an elevation consistent with the top of the slab or terminate at impediments such as waterstops or dowels. Consult the structural and environmental engineer of record before proceeding.

SEAL TO PERIMETER WALL OR FOOTING WITH DRAGOTACK TAPE: (Fig. 2a and 2b)

- a. Make sure area of adhesion is free of dust, dirt, debris, moisture, and frost to allow maximum adhesion.
- b. Remove release liner on one side and stick to desired surface.
- c. When ready to apply Drago Wrap, remove the exposed release liner and press firmly against DragoTack Tape to secure.
- d. If a mechanical seal is needed, fasten a termination bar over the top of the Drago Wrap inline with the DragoTack Tape.

NOTE: If sealing to the footing, the footing should receive a hand float finish to allow for maximum adhesion.

Fig.2a: SEAL TO PERIMETER WALL

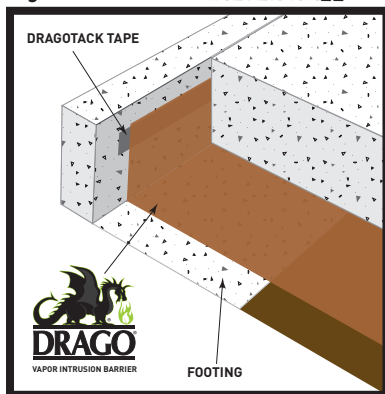
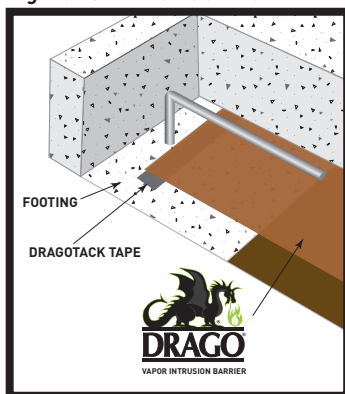


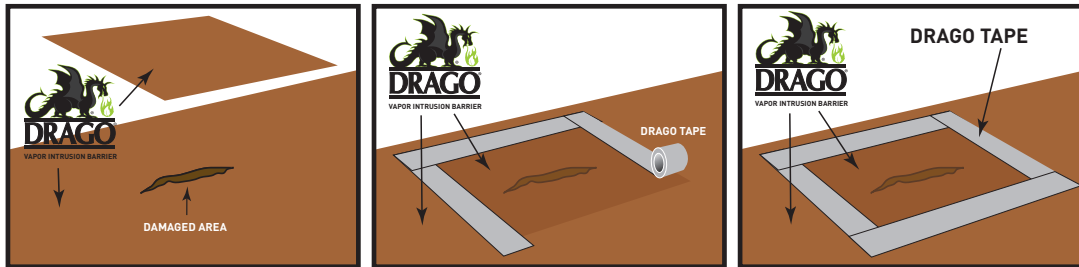
Fig. 2b: SEAL TO FOOTING





4. In the event that Drago Wrap is damaged during or after installation, repairs must be made. Cut a piece of Drago Wrap to a size and shape that covers any damage by a minimum of 6 inches in all directions. Clean all adhesion areas of dust, dirt, moisture, and frost. Tape down all edges using Drago Tape. (Fig. 3)

Fig. 3: SEALING DAMAGED AREAS

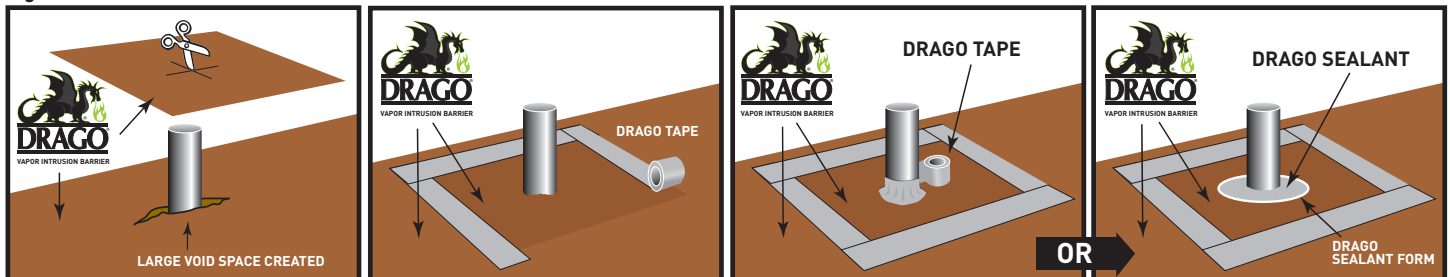


5. **IMPORTANT: ALL PENETRATIONS MUST BE SEALED.** All pipe, ducting, rebar, and block outs should be sealed using Drago Wrap, Drago Tape, and/or Drago® Sealant and Drago® Sealant Form. (Fig. 4a). Drago accessories should be sealed directly to the penetrations.

Fig. 4a: PIPE PENETRATION SEALING



Fig. 4b: DETAIL PATCH FOR PIPE PENETRATION SEALING



DETAIL PATCH FOR PIPE PENETRATION SEALING: (Fig. 4b)

- Install Drago Wrap around pipe penetrations by slitting/cutting material as needed. Try to minimize void space created.
- If Drago Wrap is close to pipe and void space is minimized, proceed to step d.
- If void space exists, then
 - Cut a detail patch to a size and shape that creates a 6-inch overlap on all edges around the void space at the base of the pipe.
 - Cut an "X" slightly smaller than the size of the pipe diameter in the center of the detail patch and slide tightly over pipe.
 - Tape the edges of the detail patch using Drago Tape.
- Seal around the base of the pipe using Drago Tape and/or Drago Sealant and Drago Sealant Form.
 - If Drago Sealant is used to seal around pipe, make sure Drago Wrap is flush with the base of the penetration prior to pouring Drago Sealant.

DRAGO® WRAP VAPOR INTRUSION BARRIER INSTALLATION INSTRUCTIONS

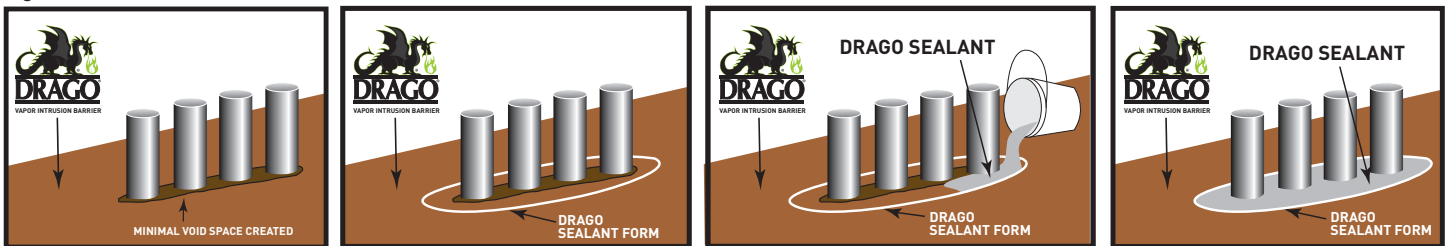


MULTIPLE PIPE PENETRATION SEALING: (Fig. 5)

NOTE: Multiple pipe penetrations in close proximity may be most efficiently sealed using Drago Wrap, Drago Sealant, and Drago Sealant Form for ease of installation.

- Cut a hole in Drago Wrap such that the membrane fits over and around the base of the pipes as closely as possible, ensuring that it is flush with the base of the penetrations.
- Install Drago Sealant Form continuously around the entire perimeter of the group of penetrations and at least 1 inch beyond the terminating edge of Drago Wrap.
- Pour Drago Sealant inside of Drago Sealant Form to create a seal around the penetrations.
- If the void space between Drago Wrap and the penetrations is not minimized and/or the base course allows for too much drainage of sealant, a second coat of Drago Sealant may need to be poured after the first application has cured.

Fig. 5: MULTIPLE PIPE PENETRATION SEALING



BEAST® CONCRETE ACCESSORIES - VAPOR BARRIER SAFE

Stego Industries* recommends the use of BEAST vapor barrier-safe concrete accessories, to help eliminate the use of non-permanent penetrations in Drago Wrap installations.



BEAST® FOOT
FORMING UTILITY



BEAST® SCREED



BEAST® HOOK

IMPORTANT: AN INSTALLATION COMPLETED PER THESE INSTRUCTIONS SHOULD CREATE A MONOLITHIC MEMBRANE BETWEEN ALL INTERIOR INTRUSION PATHWAYS AND VAPOR SOURCES BELOW THE SLAB AS WELL AS AT THE SLAB PERIMETER. THE UNDERLYING SUBBASE SHOULD NOT BE VISIBLE IN ANY AREA WHERE CONCRETE WILL BE PLACED. IF REQUIRED BY THE DESIGN ENGINEER, ADDITIONAL INSTALLATION VALIDATION CAN BE DONE THROUGH SMOKE TESTING.

NOTE: While Drago Wrap installation instructions are based on ASTM E1643 - *Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs*, these instructions are meant to be used as a guide, and do not take into account specific job site situations. Consult local building codes and regulations along with the building owner or owner's representative before proceeding. If you have any questions regarding the above-mentioned installation instructions or products, please call us at 877-464-7834 for technical assistance. While Stego Industries' employees and representatives may provide technical assistance regarding the utility of a specific installation practice or Stego product, they are not authorized to make final design decisions.





DRAGO® SEALANT

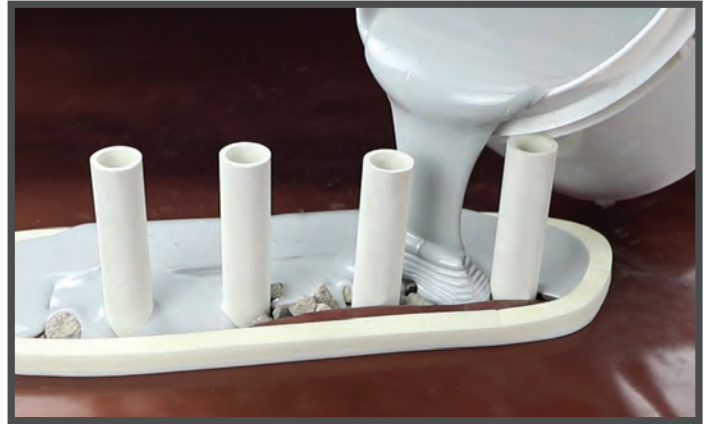
A STEGO TECHNOLOGY, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: 10/13/2017

1. PRODUCT NAME

DRAGO SEALANT

2. MANUFACTURER

c/o Stego® Industries, LLC*
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
Fx: (949) 257-4113
www.stegoindustries.com



3. PRODUCT DESCRIPTION

USES: Drago Sealant is designed to be used as a vapor intrusion membrane in conjunction with Drago® Wrap Vapor Intrusion Barrier. Drago Sealant can be used as an alternate to detail patches for penetrations in Drago Wrap.

COMPOSITION: Drago Sealant is a two-component, high performance modified cycloaliphatic epoxy sealant.

SIZE: Drago Sealant comes in a 1.8-gallon kit size: Part A (Resin) and Part B (Hardener).

4. TECHNICAL DATA

TABLE 4.1: PHYSICAL PROPERTIES OF DRAGO SEALANT

PROPERTY	TEST	RESULTS
Elongation	ASTM D412	550-600%
Tensile Strength	ASTM D412	2,000 +/- 100 psi
Compressive Strength	ASTM C695	8,800 psi
Hardness, Shore D	ASTM D2240	52
Flexural Strength	ASTM D790	4,700 psi
Bond to Concrete	ASTM D4541	350 psi
Water Vapor Permeance	ASTM E96	0.027 perms @ 20-mils
Taber Abrasion	ASTM D4060	75-80 Mgs
Chemical Resistance (TCE, PCE, Toluene, Xylene)	ASTM D471/D543	No significant change to mass or volume.

Note: perm unit = grains/(ft²*hr*in-Hg)

5. INSTALLATION

PREPARATION:

- A test application simulating the project environment should always be done prior to final usage of Drago Sealant.
- All surfaces should be dry and free of loose materials, oils, and other contaminants. The surfaces should be cleaned in the same fashion as the test surface in order to ensure proper application.
- Drago Sealant can be applied to virtually any shape or contour by brush, paint roller, trowel or squeegee at various spread rates. Optimum ambient temperature is between 40-90°F during application. Note: Cure times are affected by ambient and surface temperatures. Temperatures of 40°F and lower can slow cure times. Temperatures of 85°F and higher will speed up cured times and reduce working time.

Continued...

Note – legal notice on page 2.

DRAGO® SEALANT

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PREPARATION: *Continued...*

- Drago Sealant comes in a 1.8-gallon kit size. It consists of Part A (Resin) and Part B (Hardener). Mix the following with a drill and mixing paddle (Note: If using a drill mixer, use a low speed [not to exceed 300 rpm] to prevent air entrapment):
 - Pour Part B into Part A (2-gallon bucket) and mix well for 2 minutes.
 - Drago Sealant is designed to be immediately poured. Leaving mixed product in the container will greatly reduce pot life. Once poured out on the membrane, 15 minutes of working time can generally be expected.

PENETRATIONS:

- To repair penetrations in Drago Wrap, cut a hole in Drago Wrap such that the membrane fits over and around the base of the pipes as closely as possible, ensuring that it is flush with the base of the penetrations.
- Install Drago® Sealant Form continuously around the entire perimeter of the group of penetrations and at least 1 inch beyond the terminating edge of Drago Wrap.
- Pour Drago Sealant inside of Drago Sealant Form to create a seal around the penetrations.
- If the void space between Drago Wrap and the penetrations is not minimized and/or the base course allows for too much drainage of the sealant, a second coat of Drago Sealant may need to be poured after the first application has cured.

Review Drago Wrap's complete installation instructions prior to installation.

6. AVAILABILITY & COST

Drago Sealant is available nationally through our network of building supply distributors. For current cost information, contact your local Drago distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided and disclaims all liability from any loss or damage. Stego Technology, LLC does offer a limited warranty on Drago Wrap. Please see www.stegoindustries.com/legal.

8. MAINTENANCE

Store Drago Sealant in a dry and temperate area.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Contact Number: (877) 464-7834

Website: www.stegoindustries.com

10. FILING SYSTEMS

- www.stegoindustries.com

(877) 464-7834 | www.stegoindustries.com

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DRAGO® SEALANT FORM

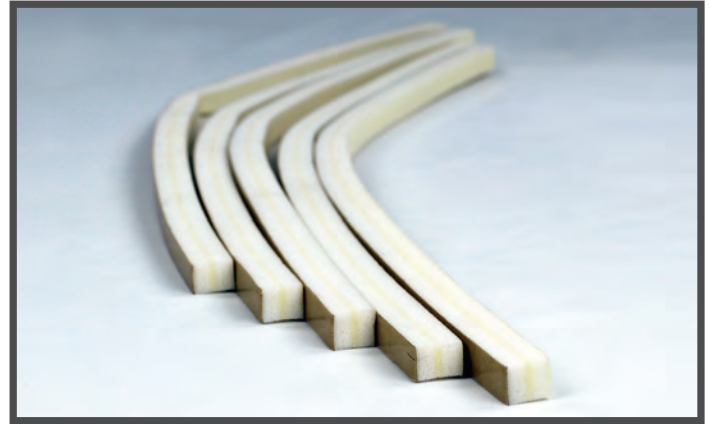
A STEGO TECHNOLOGY, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: 2/22/2019

1. PRODUCT NAME

DRAGO SEALANT FORM

2. MANUFACTURER

c/o Stego® Industries, LLC*
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
Fx: (949) 257-4113
www.stegoindustries.com



3. PRODUCT DESCRIPTION

USES: Drago Sealant Form is used in conjunction with Drago® Sealant to help create an efficient and effective seal around pipe penetrations in Drago® Wrap Vapor Intrusion Barrier.

COMPOSITION: Drago Sealant Form is a low-density, cross-linked, closed-cell polyethylene foam with an acrylic, pressure-sensitive adhesive.

SIZE: Drago Sealant Form is ½" x ½" x 24". Drago Sealant Form comes in 200 pieces per case (10 boxes of 20 pieces).

4. TECHNICAL DATA

TABLE 4.1: PHYSICAL PROPERTIES OF DRAGO SEALANT FORM

PROPERTY	RESULTS
Dimensions	½" x ½" x 24"
Color	White
Weight	0.11 oz (3.1 grams)

5. INSTALLATION

PENETRATIONS: Make sure the area of adhesion is free of dust, debris, moisture, and frost to allow maximum adhesion. When ready to apply to Drago Wrap, remove the release liner and press Drago Sealant Form firmly against Drago Wrap to secure. Install Drago Sealant Form continuously around the entire perimeter of the penetration(s) and at least 1 inch beyond the terminating edge of Drago Wrap. Install Drago Sealant Form between 40°F and 110°F. Pour Drago Sealant inside of Drago Sealant Form to create a seal around the penetration(s).

Review Drago Wrap's complete installation instructions prior to installation.

6. AVAILABILITY & COST

Drago Sealant Form is available nationally through our network of building supply distributors. For current cost information, contact your local Drago distributor or Stego Industries' Sales Representative.

DRAGO® SEALANT FORM

A STEGO TECHNOLOGY, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: 2/22/2019

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided and disclaims all liability from any loss or damage. Stego Technology, LLC does offer a limited warranty on Drago Wrap. Please see www.stegoindustries.com/legal.

8. MAINTENANCE

Store Drago Sealant Form in a dry and temperate area.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Contact Number: (877) 464-7834

Website: www.stegoindustries.com

10. FILING SYSTEMS

- www.stegoindustries.com



(877) 464-7834 | www.stegoindustries.com

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DRAGOTACK™ TAPE

A STEGO TECHNOLOGY, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: 2/22/2019

1. PRODUCT NAME

DRAGOTACK TAPE

2. MANUFACTURER

c/o Stego® Industries, LLC*
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
Fx: (949) 257-4113
www.stegoindustries.com



3. PRODUCT DESCRIPTION

USES: Dragotack Tape is a solvent-resistant, double-sided adhesive strip used to bond and seal Drago® Wrap Vapor Intrusion Barrier to concrete, masonry, wood, metal, and other surfaces. Dragotack Tape is a flexible and moldable material to allow for a variety of applications and installations.

COMPOSITION: Dragotack Tape is made from a solvent-resistant blend of synthetic rubber and resins.

SIZE: Dragotack Tape is 2" x 50'. Dragotack Tape ships 12 rolls in a case.

4. TECHNICAL DATA

TABLE 4.1: PHYSICAL PROPERTIES OF DRAGOTACK TAPE

PROPERTY	TEST	RESULTS
Dimensions		2" x 50'
Total Thickness		30 mil
Color		Grey
Material		Synthetic rubber blend
Permeance	ASTM F1249	0.03 perms (30 mil)
Adhesion to Steel	ASTM D1000	12.5 lbs/in width
Chemical Resistance (TCE, PCE, Toluene, Xylene)	ASTM D471 / D543	No significant change to mass or volume.
Installation Temperature		40°F / 110°
In Service Temperature Range		-20°F / +140°F
VOC Content		No VOCs, 100% solids

Note: perm unit = grains/(ft²*hr*in-Hg)

DRAGOTACK™ TAPE

A STEGO TECHNOLOGY, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: 2/22/2019

5. INSTALLATION

TO WALLS AND FOOTINGS: Make sure the area of adhesion is free of dust, dirt, debris, moisture, and frost to allow maximum adhesion. Remove release liner on one side and stick to desired surface. When ready to apply Drago Wrap, remove the exposed release liner and press Drago Wrap firmly against DragoTack Tape to secure.

Cut DragoTack Tape using a utility knife or scissors. Cut DragoTack Tape before removing the release liner for easier cutting. Install DragoTack Tape between 40°F and 110°F.

Review Drago Wrap's complete installation instructions prior to installation.

6. AVAILABILITY & COST

DragoTack Tape is available nationally through our network of building supply distributors. For current cost information, contact your local Drago distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided and disclaims all liability from any loss or damage. Stego Technology, LLC does offer a limited warranty on Drago Wrap. Please see www.stegoindustries.com/legal.

8. MAINTENANCE

Store DragoTack Tape in a dry and temperate area.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Contact Number: (877) 464-7834

Website: www.stegoindustries.com

10. FILING SYSTEMS

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DRAGO® TAPE

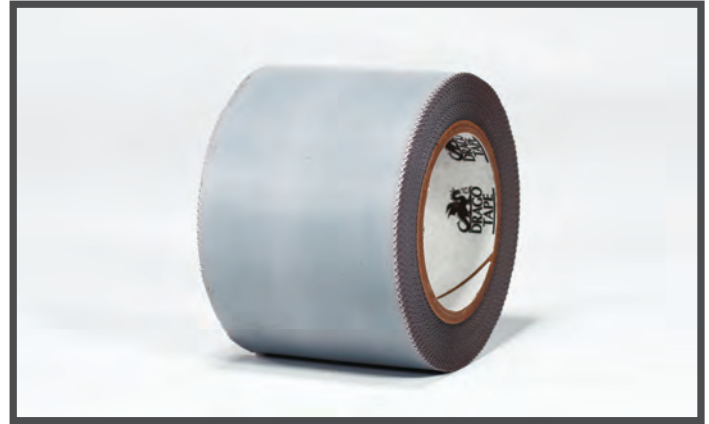
A STEGO TECHNOLOGY, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: 2/22/2019

1. PRODUCT NAME

DRAGO TAPE

2. MANUFACTURER

c/o Stego® Industries, LLC*
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
Fx: (949) 257-4113
www.stegoindustries.com



3. PRODUCT DESCRIPTION

USES: Drago Tape is a low-permeance tape designed for protective sealing, seaming, splicing, and patching applications where a highly conformable material is required. It has been engineered to bond specifically to Drago® Wrap Vapor Intrusion Barrier, making it ideal for sealing Drago Wrap seams and penetrations.

COMPOSITION: Drago Tape is a multi-layered plastic extrusion that combines uniquely designed materials with only high grade, prime, virgin resins, and an acrylic, pressure-sensitive adhesive.

SIZE: Drago Tape is 3.75" x 180'. Drago Tape ships 12 rolls in a case.

4. TECHNICAL DATA

APPLICABLE STANDARDS:

Pressure Sensitive Tape Council (PSTC)

- PSTC 101 – International Standard for Peel Adhesion of Pressure Sensitive Tape
- PSTC 107 – International Standard for Shear Adhesion of Pressure Sensitive Tape

American Society for Testing & Materials (ASTM)

- ASTM E1643 – Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used In Contact with Earth or Granular Fill under Concrete Slabs.

TABLE 4.1: PHYSICAL PROPERTIES OF DRAGO TAPE

PROPERTY	TEST	RESULTS
Permeance	ASTM F1249	0.058 perms
Tensile Strength MD	ASTM D882	84.1 lbf/in
Elongation (at break) MD	ASTM D882	765%
180° Peel Adhesion	PSTC 101 20-min dwell to Drago Wrap PSTC 101 24-hour dwell to Drago Wrap	98.8 oz/in 90.7 oz/in
Shear Adhesion	PSTC 107 24-hour dwell (1" x 1", 1kg/wt) to Drago Wrap	244 minutes

Note: perm unit = grains/(ft²*hr*in-Hg)

5. INSTALLATION

SEAMS: Overlap Drago Wrap a minimum 12 inches and seal with Drago Tape. Make sure the area of adhesion is free from dust, moisture and frost to allow maximum adhesion of the pressure-sensitive tape.

Continued...

Note – legal notice on page 2.

DRAGO® TAPE

A STEGO TECHNOLOGY, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: 2/22/2019

5. INSTALLATION *CONTINUED...*

PIPE PENETRATION SEALING:

- Install Drago Wrap around pipe by slitting/cutting material.
- If void space is minimal, seal around base of pipe with Drago Tape and/or Drago® Sealant and Drago® Sealant Form.

DETAIL PATCH FOR PIPE PENETRATION SEALING:

- Cut a piece of Drago Wrap that creates a 6 inch overlap around all edges of the void space.
- Cut an "X" slightly smaller than the size of the pipe diameter in the center of the detail patch.
- Slide detail patch over pipe, secure tightly.
- Tape down all sides of detail patch with Drago Tape.
- Seal around base of pipe with Drago Tape and/or Drago Sealant and Drago Sealant Form.

Drago Tape should be installed above 40°F. In temperatures below 40°F, take extra care to remove moisture or frost from the area of adhesion. Ensure that the entirety of all seams are taped with applied pressure to allow for maximum and continuous adhesion of the pressure-sensitive Drago Tape.

Review Drago Wrap's complete installation instructions prior to installation.

6. AVAILABILITY & COST

Drago Tape is available nationally through our network of building supply distributors. For current cost information, contact your local Drago distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided and disclaims all liability from any loss or damage. Stego Technology, LLC does offer a limited warranty on Drago Wrap. Please see www.stegoindustries.com/legal.

8. MAINTENANCE

Store Drago Tape in a dry and temperate area.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Contact Number: (877) 464-7834

Website: www.stegoindustries.com

10. FILING SYSTEMS

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Revision Date: July 30, 2018 | Date of Issue: June 1, 2017 | Version Number: 2.0

SECTION 1: IDENTIFICATION

Product Identifier

Product Name: Drago Wrap

Intended Use of the Product

Vapor Intrusion Barrier

Company Name, Address, and Telephone of the Responsible Party

Stego Technology, LLC or C/O Stego® Industries, LLC*
216 Avenida Fabricante #101
San Clemente, CA 92672

Emergency Telephone Number

Emergency Number: 1 (800) 424-9300 (24 Hrs.) CHEMTREC

Main Contact Number: (877) 464-7834

SECTION 2: HAZARDS IDENTIFICATION

Classification: This product is not classified as hazardous in accordance with 29 C.F.R. § 1910.1200.

Signal word: None.

Pictogram(s): None.

Hazard statement(s): None.

Precautionary statement(s): None.

Hazards not otherwise classified: Polymer film can burn if exposed to excessive temperatures beyond the normal use of the product.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	CAS Number	% by WT.
Copper	Proprietary*	<10%*

The selections marked with an '*' are proprietary and considered to be Trade Secrets. This is the reason that they are listed as such, or provided as a range.

SECTION 4: FIRST AID MEASURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

Inhalation: Not a respirable film. If exposed to fumes from combustion, move subject to fresh air; if breathing is difficult, give oxygen and get medical attention; if victim has stopped breathing, give artificial respiration and get medical attention.

Eye Contact: Not a probable route of exposure. If exposed to fumes from overheating or from combustion, move subject to fresh air. Flush with plenty of water; if irritation continues, get medical attention.

Skin Contact: No treatment necessary. For thermal burns, cool molten materials with water and get medical attention.

Ingestion: Not a probable route of exposure.

Continued...

Note - legal notice on page 5



Revision Date: July 30, 2018 | Date of Issue: June 1, 2017 | Version Number: 2.0

SECTION 5: FIRE-FIGHTING MEASURES

Unusual Hazards: Polymer film can burn if exposed to excessive temperature beyond the normal use of the product.

Extinguishing Agents: Use extinguishing media appropriate for surrounding fire: carbon dioxide, foam, dry chemical, and water fog.

Personal Protective: Equipment unnecessary unless resin is burned, which is not an intended use of the product. If resin is burning, wear self-contained breathing apparatus (pressure-demand MSHA/NIOSH approved or equivalent) and full protective gear.

Note: See Section 10 for hazardous combustion and thermal decomposition information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Protection: None necessary.

Procedures: None necessary.

SECTION 7: HANDLING AND STORAGE

Storage Conditions: Cool, dry storage recommended. Indoor storage recommended.

Avoid storing films in areas containing aromatic hydrocarbons, halogenated compounds, chlorinated compounds, oxidative agents, solvents or other known polyethylene solubilizers, prodegradants, as they may impact the product performance and/or service life.

Handling Procedures: Avoid direct sunlight. Avoiding direct UV exposure of product. Avoid contact with incompatible materials.

Installation Temperature Range: Below 110°F (ambient). Please also see technical and safety data sheets for accessory products installation/application temperature ranges.

In-Service Temperature Range: Below 85°F (soil and slab temperature, beginning 28 days following slab placement). Please also see technical and safety data sheets for accessory products installation/application temperature ranges.

Exposure to Ultraviolet Radiation/Weather Events: The amount of time between when Stego Wrap is installed and when concrete is placed or other complete protection from sunlight and weather events is provided should be minimized while not exceeding 7 days.

Please review the remainder of the SDS and this wrap's technical data sheet for storage and additional information. If any of the conditions cited above pose a problem for the typical installation of Drago Wrap, please contact Stego Industries for additional information and solutions.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Ingredient	OSHA PEL	ACGIH TWA
Copper	0.1 mg/m ³ (Cu fume)	0.2 mg/m ³ (Cu fume)

Respiratory Protection: None required during handling. Local exhaust to remove fumes from heat sealing and hot wire cutting areas of packaging or bag converting for worker comfort.

Eye Protection: None necessary.

Hand Protection: None necessary.

Engineering Controls (Ventilation): Use local exhaust ventilation when routinely heat sealing this product. Recommended ventilation is with a minimum capture velocity of 100 ft/min. (30 m/min.) at the point of vapor evolution. Refer to the current edition of *Industrial Ventilation: A Manual of Recommended Practice* published by the American Conference of Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.

Continued...

Note - legal notice on page 5



Revision Date: July 30, 2018 | Date of Issue: June 1, 2017 | Version Number: 2.0

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES *Continued...*

General Physical Form: Solid plastic film.

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Plastic film
Color:	Copper and Gray
State:	Solid
Odor Characteristics:	None
Odor Threshold:	None
pH:	Not Applicable
Melting Point/Freezing Point:	Not Applicable
Initial Boiling Point and Boiling Point Range:	Not Applicable
Flash Point:	Not Applicable
Evaporation Rate:	Not Applicable
Flammability (solid, gas):	Not Applicable
Upper flammability:	Not Applicable
Lower Flammability:	Not Applicable
Vapor Pressure:	Not Applicable
Vapor Density:	Not Applicable
Relative Density:	Not Applicable
Solubility:	Not Applicable
Partition Coefficient: n-octanol/water:	Not Applicable
Auto ignition-temperature:	Not Applicable
Decomposition temperature:	>325°C (617°F)
Viscosity:	Not Applicable

SECTION 10: STABILITY AND REACTIVITY

Instability: This material is considered stable. Thermal decomposition is dependent on time and temperature.

HAZARDOUS DECOMPOSITION PRODUCTS

Substance	Condition
Hydrocarbons	Combustion by-product
Carbon Monoxide	Combustion by-product
Carbon Dioxide	Combustion by-product
Copper Fume	Combustion by-product

Hazardous Polymerization: Product will not undergo hazardous polymerization. Product does not decompose at ambient temperatures.

Incompatibility: Lead azide and lead stiplanate commonly used in high explosive detonators react violently with copper.

Reactivity: Reacts and binds with polar gases such as Hydrogen sulfide (H₂S), Ozone (O₃), Carbonyl sulfide (COS), Sulfur Dioxide (SO₂), Hydrogen chloride (HCl), Formic Acid, Acetic Acid.

Hazardous Decomposition: Under recommended usage conditions, hazardous decomposition products are not expected. Hazardous decomposition products may occur as a result of oxidation, heating, or reaction with another material.

Continued...

Note - legal notice on page 5



Revision Date: July 30, 2018 | Date of Issue: June 1, 2017 | Version Number: 2.0

SECTION 11: TOXICOLOGICAL INFORMATION

This product, when used under reasonable conditions and in accordance with the directions for use, should not present a health hazard. However, use or processing of the product in a manner not in accordance with the product's directions for use may affect the performance of the product and may present potential health and safety hazards.

Acute Data: No Toxicity data are available for this material.

PRIMARY ROUTES OF EXPOSURE

Skin Contact: Only if burned.

Eye Contact: Only if burned.

Respiratory Contact: Only if burned.

ACUTE EFFECTS OF EXPOSURE

Ingestion: Not a probable route of exposure.

Inhalation: No inhalation risk unless product is heated to point of burning, which in normal applications does not occur. Fumes from combustion are unlikely to be produced during heat shrinking. Local ventilation should be used for comfort. Testing data shows copper/polymer particulate count at approximately 0.007mg/m³, which is well below OSHA PEL of 0.1 mg/m³.

Eye Contact: No eye exposure risk during all product usage except during heating if plastic is heated to point of combustion, which does not occur during the intended use of the product. Fumes from combustion, which have a low toxicity, may be produced during hot wire cutting or heat sealing. Fumes are unlikely to be produced during heat shrinking when used as directed.

Skin Contact: Not irritating when used as directed. Hot polymer created during heat shrinking, wire cutting, or heat sealing, may produce thermal burns.

Chronic Effects of Exposure: None known when used as directed.

Carcinogenicity: None known when used as directed.

SECTION 12: ECOLOGICAL INFORMATION

This material is insoluble in water and not expected to present any environmental problems in normal application, however areas containing aromatic hydrocarbons, halogenated compounds, chlorinated compounds, pH extremities, oxidative agents, solvents or other known polyethylene solubilizers, prodegradants, etc. may impact the product performance and/or service life.

SECTION 13: DISPOSAL CONSIDERATIONS

Procedure: Reclaim if feasible. If product can't be reclaimed, no special requirements are necessary; dispose of as ordinary solid waste. Pick up film for good "housekeeping" and to prevent a slipping hazard. Incineration or landfill in compliance with federal, state and local regulations. *Since regulations vary, consult applicable regulations or authorities before disposal.*

SECTION 14: TRANSPORT INFORMATION

US DOT Hazard Class: Not regulated.

Continued...

Note - legal notice on page 5



Revision Date: July 30, 2018 | Date of Issue: June 1, 2017 | Version Number: 2.0

SECTION 15: REGULATORY INFORMATION

Workplace Classification: This product is not considered hazardous under the OSHA Hazard Communication Standard (29 C.F.R. § 1910.1200).

CERCLA Information (40 C.F.R. 302.4): Because of the form in which copper is contained within the resin, releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Waste Classification: When this product becomes a waste, it is classified as a non-hazardous waste under criteria of the Resource Conservation and Recovery Act (40 C.F.R. 261).

SECTION 16: OTHER INFORMATION

HAZARD RATING

Health: 0 | Flammability: 1 | Reactivity: 0 | Special Hazards: None

Scale: 4 = Extreme | 3 = High | 2 = Moderate | 1 = Slight | 0 = Insignificant

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material, but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

Rating are based on internal supplier's guidelines, and they are intended for internal use only.

ABBREVIATIONS

ACGIH = American Conference of Governmental Industrial Hygienists

OSHA = Occupational Safety and Health Administration

TLV = Threshold Limit Value

PEL = Permissible Exposure Limit

TWA = Time Weighted Average

STEL = Short-Term Exposure Limit

Disclaimer: The information contained herein relates only to the specific material identified. Stego Technology, LLC believes that such information is accurate and reliable as of the date of this material safety data sheet, but no representation, guarantee or warranty, expressed or implied, is made as to the accuracy, reliability, or completeness of the information. Stego Technology, LLC urges persons receiving this information to make their own determination as to the information's suitability and completeness for their particular application.

Please read the product statements for all Drago® products by navigating here:
<http://www.stegoindustries.com/legal>



DRAGO® SEALANT PART A SAFETY DATA SHEET

SDS

P1 of 6

Revision Date: July 30, 2018 | Date of Issue: June 3, 2017 | Version Number: 2.0

SECTION 1: IDENTIFICATION

Product Identifier

Product Name: Drago Sealant Part A

Intended Use of the Product

Mixed with Drago® Sealant Part B; sealant around penetrations.

Company Name, Address, and Telephone of the Responsible Party

Stego Technology, LLC or C/O Stego® Industries, LLC*
216 Avenida Fabricante #101
San Clemente, CA 92672

Emergency Telephone Number

Emergency Number: 1 (800) 424-9300 (24 Hrs.) CHEMTREC

Main Contact Number: (877) 464-7834

SECTION 2: HAZARDS IDENTIFICATION

GHS Classification:

GHUS Classification in accordance with 29 CFT 1910 (OSHA HCS)

Skin corrosion/irritation: Category 3

Serious eye damage/eye irritation: Category 2B

Skin sensitizer: Category 1

GHS Label Elements

Signal Word: Warning

Hazard pictograms/symbols:



Hazard Statements

H315: Causes skin irritation.

H316: May cause mild skin irritating.

H320: May cause eye irritating.

H317: May cause allergic skin reaction.

Precaution Statements (Prevention):

P280: Wear protective gloves/clothing and eye/face protection

332+337+350+313: If skin/eyes irritation occurs, wash with plenty of soap and water and get medical advice/attention.

P410+403: Store container tightly closed in well-ventilated place.

P273: Avoid release to the environment.

Precaution Statements (Response):

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P333 + P311 If skin irritation or rash occurs: Call a POISON CENTER or Doctor/physician.

P303 + P362 IF ON SKIN (or hair): Wash with plenty of soap and water.

P332 + P313 If skin irritation occurs: Get medical advice/attention.

P362 + P364 Take off contaminated clothing and wash before reuse.

Continued...

Note - legal notice on page 6



DRAGO® SEALANT PART A SAFETY DATA SHEET

Revision Date: July 30, 2018 | Date of Issue: June 3, 2017 | Version Number: 2.0

SECTION 2: HAZARDS IDENTIFICATION *Continued...*

P391 Collect spillage.

P337 + P311 If eye irritation persists: Call a POISON CENTER or doctor/physician.

Precaution Statements (Disposal):

P501 Dispose of contents/container to hazardous or special waste collection point.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	WGT%	CAS#
Reaction products of Epichlorohydrin and Bisphenol A	70-70%	25068-38-6
Proprietary Blend	10-30%	TS
1,4-bis(2,3-epoxypropoxy) butane	1-10%	2425-79-8

SECTION 4: FIRST AID MEASURES

Eyes: Irrigation of the eye immediately with water for fifteen minutes is a good safety practice.

Skin: Contact will probably cause no more than irritation. Wash off in flowing water or shower. Wash clothing before reuse.

Ingestion: Low in toxicity. No adverse effects anticipated by this route of exposure incidental to proper industrial handling.

Inhalation: Remove to fresh air if effect occurs. Consult medical personnel.

Notes to Physicians: No specific antidote. Supportive care. Treatment based on judgement of the physician in response to reactions of the patient.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media: Suitable extinguishing media; foam, water spray, dry powder, carbon dioxide.

Special hazards arising from the substance or mixture: Carbon oxides, Hydrogen chloride gas, Hydrogen fluoride.

Advice for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.

Further information: Use water spray to cool unopened containers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Methods for Cleaning Up: Soak up in absorbent material and collect in suitable containers. Residual may be removed using steam or hot, soapy water.

SECTION 7: HANDLING AND STORAGE

Handling and Storage: Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Keep away from sources of ignition. No smoking. Conditions: keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect from direct sunlight.

Installation Temperature Range: 40-90°F (surface and ambient).

In-Service Temperature Range: -20-140°F (surface and surrounding).

Exposure to Ultraviolet Radiation/Weather Events: The amount of time between when Drago Sealant is installed and when concrete is placed or other complete protection from sunlight and weather events is provided should be minimized while not exceeding 7 days.

Please review the remainder of the SDS and relevant technical data sheets for storage and additional information. If any of the conditions cited above pose a problem for the typical installation of the Drago Sealant, please contact Stego Industries for additional information and solutions.

Continued...

Note - legal notice on page 6



Revision Date: July 30, 2018 | Date of Issue: June 3, 2017 | Version Number: 2.0

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation: Good Room ventilation usually adequate for most operations.

Respiratory Protection: None normally needed.

Eye protection: Use chemical goggles.

Skin Protection: For brief contact, no precautions other than clean body-covering clothing should be needed. Use impervious gloves when prolonged or frequently repeated contact could occur.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Grey, viscous putty.

Odor: Weak

Physical State: Liquid

Boiling Point: >252 °C

Vapor Pressure (mmHg): F: N/A (C: N/A)

Vapor Density (Air = 1): N/A

Specific Gravity (H2O = 1): 1.12-1.14

Flammability: Not flammable

SECTION 10: STABILITY AND REACTIVITY

Conditions to Avoid (Stability): See Section 7 – Handling and Storage.

Incompatibility (Material to Avoid): Strong acids, strong bases, strong oxidizing agents, strong reducing agents.

Hazardous Decomposition or By-Products:

Decomposition products: carbon oxides, nitrogen oxides;

Thermal decomposition: No decomposition if stored and handled as prescribed/indicated.

Chemical Stability: The product is stable if stored and handled as prescribed/indicated.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute toxicity: Assessment of acute toxicity: Virtually nontoxic after a single ingestion. Based on available Data, the classification criteria are not met.

Inhalation: No applicable information available.

Dermal: No applicable information available.

Assessment other acute effects: No applicable information available.

Irritation / corrosion: Assessment of irritating effects: Eye contact causes irritation. Skin contact causes irritation. No applicable information available.

Sensitization: Assessment of sensitization: Sensitization after skin contact possible.

CHRONIC TOXICITY/EFFECTS

Repeated dose toxicity: Assessment of repeated dose toxicity: No reliable data was available concerning repeated dose toxicity. Based on available Data, the classification criteria are not met.

Genetic toxicity: Assessment of mutagenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

Carcinogenicity: Assessment of carcinogenicity: Based on the ingredients there is no suspicion of a carcinogenic effect in humans. Based on available Data, the classification criteria are not met.

Reproductive toxicity: Assessment of reproduction toxicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

Continued...

Note - legal notice on page 6



Revision Date: July 30, 2018 | Date of Issue: June 3, 2017 | Version Number: 2.0

SECTION 11: TOXICOLOGICAL INFORMATION *Continued...*

Teratogenicity: Assessment of teratogenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

Other Information: The product has not been tested. The statement has been derived from the properties of the individual components.

SYMPTOMS OF EXPOSURE

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: No information available.

Persistence and degradability: Not readily biodegradable (by OECD criteria).

Bioaccumulative potential: Because of the product's consistency and low water solubility, bioavailability is improbable.

Mobility in soil: The substance will not evaporate into the atmosphere from the water surface.

Other adverse effects: Do not discharge product into the environment without control. The product has not been tested.
N/A

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal Methods:

Preferred method of disposal includes incineration under controlled conditions in accordance with all local and national laws and regulations. The generation of waste should be avoided or minimized wherever possible. Untreated material is not suitable for disposal. Waste, even small quantities, should never be poured down drains, sewers or watercourses. Waste must be disposed of in accordance with federal, state and local environmental control regulations. This material, when properly mixed and cured with its resin component at the proper mix ratio, may be safely land filled. Contaminated packaging: Empty containers can only be disposed of when the remaining product adhering to the container walls has been removed. Hazard warning labels should be removed from the container only after it has been properly emptied.

Waste Disposal Methods: Burn in adequate incinerator or bury in an approved landfill; in accordance with local, state and federal regulations.

SECTION 14: TRANSPORT INFORMATION

	DOT Classification	IMDG	IATA (Cargo)
UN Number	Non-regulated	3082	3082
UN Proper Shipping Name	Non-regulated	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S (LIQUID EPOXY RESIN)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S (LIQUID EPOXY RESIN)
Hazard Classes	N/A	9	9
Packing Group	N/A	III	III
Marin Pollutant	N/A	Yes	Yes

Continued...

Note - legal notice on page 6



Revision Date: July 30, 2018 | Date of Issue: June 3, 2017 | Version Number: 2.0

SECTION 15: REGULATORY INFORMATION

U.S. Federal Regulations:

TSCA (Toxic Substance Control Act):

The components of this product are contained on the chemical substance inventory list.

CERCLA (Comprehensive Response, Compensation, and Liability Act)

Requires notification of the National Response Center of release of quantities of Hazardous Substances to or greater than the reportable quantities (RQ's) in 40 CFR 302.4. Components present in this product at level which could require reporting under the statute are:

Chemical Name	CAS#	% by Weight	RQ
NONE	N/A	N/A	N/A

SARA TITLE II (Superfund Amendments and Reauthorization Act)

Sections 301-304 require emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQ's) in 40 CFR 355. Components present in this product at a level which could require reporting under this statute are:

Chemical Name	CAS#	% by Weight
NONE	N/A	N/A

311/312 Hazard Categories

Sections 311-312 require product be reviewed and applicable EPA Hazard Definitions be identified and made known.

EPA HAZARD CLASSIFICATIONS

Acute Hazard: NO

Chronic Hazard: NO

Fire Hazard: NO

Pressure Hazard: NO

Reactive Hazard: NO

313 Reportable Ingredients

Section 3132 requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDS/SDS sheets that are copied and distributed for this material. Components present in this product at levels which could require reporting under the statute are:

Chemical Name	CAS#	% by Weight
NONE	N/A	N/A

Section 15 Notes: If you are unsure if you must report more information, call the EPA Emergency Planning and Right-To-Know Hot Line: (800) 535-0202 or (202) 479-2449. The concentrations shown in this document are maximum or ceiling levels (expressed in weight %, unless otherwise specified) to be used for regulations. Trade Secretes are indicated by "TS".

Continued...

Note - legal notice on page 6



DRAGO® SEALANT PART A SAFETY DATA SHEET

SDS

P6 of 6

Revision Date: July 30, 2018 | Date of Issue: June 3, 2017 | Version Number: 2.0

SECTION 16: OTHER INFORMATION

Disclaimer: The information contained herein relates only to the specific material identified. Stego Technology, LLC believes that such information is accurate and reliable as of the date of this material safety data sheet, but no representation, guarantee or warranty, expressed or implied, is made as to the accuracy, reliability, or completeness of the information. Stego Technology, LLC urges persons receiving this information to make their own determination as to the information's suitability and completeness for their particular application.

Please read the product statements for all Drago® products by navigating here:
<http://www.stegoindustries.com/legal>



DRAGO® SEALANT PART B SAFETY DATA SHEET

Revision Date: July 30, 2018 | Date of Issue: June 3, 2017 | Version Number: 2.0

SECTION 1: IDENTIFICATION

Product Identifier

Product Name: Drago Sealant Part B

Intended Use of the Product

Mixed with Drago® Sealant Part A; sealant around penetrations.

Company Name, Address, and Telephone of the Responsible Party

Stego Technology, LLC or C/O Stego® Industries, LLC*
216 Avenida Fabricante #101
San Clemente, CA 92672

Emergency Telephone Number

Emergency Number: 1 (800) 424-9300 (24 Hrs.) CHEMTREC

Main Contact Number: (877) 464-7834

SECTION 2: HAZARDS IDENTIFICATION

GHS Classification:

GHUS Classification in accordance with 29 CFT 1910 (OSHA HCS)

Acute Toxicity – Oral – Category 4

Skin corrosion/irritation: Category 1C

Serious eye damage/eye irritation: Category 1

Skin sensitizer: Category 1

Specific Target Organ Toxicity: Repeated Exposure – Oral – Category 2

GHS Label Elements

Signal Word: Danger

Hazard pictograms/symbols:



Hazard Statements

H302: Harmful if swallowed.

H314: Causes severe skin burns and eye damage.

H317: May cause an allergic skin reaction.

H373a: May cause damage to organs through prolonged or repeated exposure if swallowed.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	WGT%	CAS#
Modified Cycloaliphatic Amine Reaction Product	78-90%	TS
Benzyl alcohol	10-25%	100-51-6
Tris(2,4,6-(dimethylaminomethyl) phenol	< 5%	90-72-2

Continued...

Note - legal notice on page 6



DRAGO® SEALANT PART B SAFETY DATA SHEET

Revision Date: July 30, 2018 | Date of Issue: June 3, 2017 | Version Number: 2.0

SECTION 4: FIRST AID MEASURES

Eyes: Immediate and continuous irrigation with flowing water for at least 30 minutes is required. Promptly seek medical attention.

Skin: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing, preferably under a safety shower. Seek medical attention immediately. Avoid prolonged or repeated contact skin. Washing thoroughly after handling.

Ingestion: Do not induce vomiting. Give large amount of water or milk if available and transport to medical facility.

Inhalation: Remove to fresh air if effect occurs. Consult medical personnel.

Notes to Physicians: Corrosive. May cause stricture. Lavage is performed, suggest endotracheal and/or esophagoscopic control. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgement of the physician in response to reactions of the patient. Application of corticosteroid cream has been effective in treating skin irritation.

SECTION 5: FIRE-FIGHTING MEASURES

Flammable limits in air (% by Volume): UPPER LIMITS: N/A LOWER LIMITS: N/A

Flash Point: 213 °F (100.56°C)

Method Used: PMCC

NFPA Hazard Rating: 4 = EXTREME; 3 = HIGH; 2 = MODERATE; 1 = SLIGHT; 0 = INSIGNIFICANT

NFPA Hazard Classification:

HEALTH: 2

FLAMMABILITY: 1

REACTIVITY: 0

OTHER: N/A

Extinguishing Media: Water Fog, Alcohol Foam, CO2, or Dry Chemical

Fire Fighting Procedures: Wear positive pressure SCBA

Unusual Fire and Explosion Hazards: Use full protective clothing (see section 8).

SECTION 6: ACCIDENTAL RELEASE MEASURES

Large Spill: Dike up and pump into appropriate containers.

Small Spill: Use noncombustible absorbent materials and shovel into suitable containers.

SECTION 7: HANDLING AND STORAGE

Handling and Storage: Ground all transfer equipment. Hold bulk storage under a nitrogen blanket. This product should not come in contact with copper or copper-bearing alloys. Good general housekeeping procedure should be followed. Do not store near acids. Keep containers tightly closed in a dry, cool and well-ventilated place.

Installation Temperature Range: 40-90°F (surface and ambient).

In-Service Temperature Range: -20-140°F (surface and surrounding).

Exposure to Ultraviolet Radiation/Weather Events: The amount of time between when Drago Sealant is installed and when concrete is placed or other complete protection from sunlight and weather events is provided should be minimized while not exceeding 7 days.

Please review the remainder of the SDS and relevant technical data sheets for storage and additional information. If any of the conditions cited above pose a problem for the typical installation of the Drago Sealant, please contact Stego Industries for additional information and solutions.

Continued...

Note - legal notice on page 6



Revision Date: July 30, 2018 | Date of Issue: June 3, 2017 | Version Number: 2.0

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation: Control airborne concentration below the exposure guideline. Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Respiratory Protection: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air purifying respirator.

Eye protection: Use chemical goggles. If vapor exposure causes eye irritation, use a full-face respirator. Eye wash fountain should be located in immediate work area.

Skin Protection: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. Safety shower should be located in immediate work area. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse. Contaminated leather items, such as shoes, belts and watchbands, should be removed and destroyed.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Straw-colored liquid.

Odor: Amine odor.

Physical State: Liquid

Boiling Point: 405°F (207°C)

Vapor Pressure (mmHg): < 10.37 mmHg

Vapor Density (Air = 1): 5.88

Specific Gravity (H₂O = 1): 1.01

Viscosity: 450 mPa.s at 73°(23°C)

SECTION 10: STABILITY AND REACTIVITY

Conditions to Avoid (Stability): See Section 7 – Handling and Storage.

Incompatibility (Material to Avoid): Strong acids, strong bases, strong oxidizing agents, strong reducing agents.

Hazardous Decomposition or By-Products:

Decomposition products: carbon oxides, nitrogen oxides;

Thermal decomposition: No decomposition if stored and handled as prescribed/indicated.

Chemical Stability: The product is stable if stored and handled as prescribed/indicated.

Conditions to Avoid (Stability): Can react strongly with epoxy resins at elevated temperatures.

Incompatibility (Material to Avoid): Epoxy resins under uncontrolled conditions..

Hazardous Decomposition or By-Products: Nitrogen oxides when burned.

Hazardous Polymerization: Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

Likely routes of exposure: N/A

SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS

Ingestion: Ingestion may cause gastrointestinal irritation or ulceration. Ingestion may cause burns of mouth and throat.

Aspiration: Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

Skin Contact: Prolonged or widespread skin contact may result in absorption of harmful amounts.

Continued...

Note - legal notice on page 6



Revision Date: July 30, 2018 | Date of Issue: June 3, 2017 | Version Number: 2.0

SECTION 11: TOXICOLOGICAL INFORMATION *Continued...*

IRRITATION

Skin: Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness and tissue damage. Skin contact has caused allergic skin reactions in certain sensitized individuals.

Eyes: May cause pain disproportionate to the level of irritation to eye tissues. May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Inhalation: May cause allergic respiratory response. Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

Delayed and immediate effects and also chronic effects from short and long term exposure:

Carcinogen: This product contains no materials that are reported as known or suspect carcinogens in levels above 0.1%.

Mutagen: This product contains no materials that are reported as known or suspect mutagens in levels above 0.1%.

Reproductive Hazard: This product contains no materials that are known or suspected of causing a reproductive hazard in levels above 0.1%.

Numerical measures of toxicity: N/A

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: No information available.

Persistence and degradability: N/A

Bioaccumulative potential: N/A

Mobility in soil: N/A

Other adverse effects: N/A

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal Methods:

Preferred method of disposal includes incineration under controlled conditions in accordance with all local and national laws and regulations. The generation of waste should be avoided or minimized wherever possible. Untreated material is not suitable for disposal. Waste, even small quantities, should never be poured down drains, sewers or watercourses. Waste must be disposed of in accordance with federal, state and local environmental control regulations. This material, when properly mixed and cured with its resin component at the proper mix ratio, may be safely land filled. Contaminated packaging: Empty containers can only be disposed of when the remaining product adhering to the container walls has been removed. Hazard warning labels should be removed from the container only after it has been properly emptied.

SECTION 14: TRANSPORT INFORMATION

	DOT Classification	IMDG	IATA (Cargo)
UN Number	2735	2735	2735
UN Proper Shipping Name	Amines, liquid, corrosive, n.o.s. (Polyamine)	Amines, liquid, corrosive, n.o.s. (Polyamine)	Amines, liquid, corrosive, n.o.s. (Polyamine)
Hazard Classes	8	8	8
Packing Group	III	III	III

Continued...

Note - legal notice on page 6



Revision Date: July 30, 2018 | Date of Issue: June 3, 2017 | Version Number: 2.0

SECTION 15: REGULATORY INFORMATION

U.S. Federal Regulations:

TSCA (Toxic Substance Control Act):

The components of this product are contained on the chemical substance inventory list.

CERCLA (Comprehensive Response, Compensation, and Liability Act)

Requires notification of the National Response Center of release of quantities of Hazardous Substances to or greater than the reportable quantities (RQ's) in 40 CFR 302.4. Components present in this product at level which could require reporting under the statute are:

Chemical Name	CAS#	% by Weight	RQ
NONE	N/A	N/A	N/A

SARA TITLE II (Superfund Amendments and Reauthorization Act)

Sections 301-304 require emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQ's) in 40 CFR 355. Components present in this product at a level which could require reporting under this statute are:

Chemical Name	CAS#	% by Weight
NONE	N/A	N/A

311/312 Hazard Categories

Sections 311-312 require product be reviewed and applicable EPA Hazard Definitions be identified and made known.

EPA HAZARD CLASSIFICATIONS

Acute Hazard: YES

Chronic Hazard: YES

Fire Hazard: NO

Pressure Hazard: NO

Reactive Hazard: NO

313 Reportable Ingredients

Section 3132 requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDS/SDS sheets that are copied and distributed for this material. Components present in this product at levels which could require reporting under the statute are:

Chemical Name	CAS#	% by Weight
NONE	N/A	N/A

Section 15 Notes: If you are unsure if you must report more information, call the EPA Emergency Planning and Right-To-Know Hot Line: (800) 535-0202 or (202) 479-2449. The concentrations shown in this document are maximum or ceiling levels (expressed in weight %, unless otherwise specified) to be used for regulations. Trade Secretes are indicated by "TS".

Continued...

Note - legal notice on page 6



DRAGO® SEALANT PART B SAFETY DATA SHEET

SDS

P6 of 6

Revision Date: July 30, 2018 | Date of Issue: June 3, 2017 | Version Number: 2.0

SECTION 16: OTHER INFORMATION

Disclaimer: The information contained herein relates only to the specific material identified. Stego Technology, LLC believes that such information is accurate and reliable as of the date of this material safety data sheet, but no representation, guarantee or warranty, expressed or implied, is made as to the accuracy, reliability, or completeness of the information. Stego Technology, LLC urges persons receiving this information to make their own determination as to the information's suitability and completeness for their particular application.

Please read the product statements for all Drago® products by navigating here:
<http://www.stegoindustries.com/legal>



DRAGO® SEALANT FORM SAFETY DATA SHEET

Revision Date: July 30, 2018 | Date of Issue: May 15, 2017 | Version Number: 2.0

SECTION 1: IDENTIFICATION

Product Identifier

Product Name: Drago Sealant Form

Intended Use of the Product

Form to contain Drago® Sealant around penetrations of Drago® Wrap.

Company Name, Address, and Telephone of the Responsible Party

Stego Technology, LLC or C/O Stego® Industries, LLC*
216 Avenida Fabricante #101
San Clemente, CA 92672

Emergency Telephone Number

Emergency Number: 1 (800) 424-9300 (24 Hrs.) CHEMTREC

Main Contact Number: (877) 464-7834

SECTION 2: HAZARDS IDENTIFICATION

No hazardous identification necessary under expected uses.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Not Applicable – Material is exempt from regulation because it is an “article” per the definition from Title 29 of the Code of Federal Regulations, OSHA Part 1910.1200© (copied below):

Definitions: Article means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

SECTION 4: FIRST AID MEASURES

First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If large quantities are swallowed, call a physician immediately.

SECTION 5: FIRE-FIGHTING MEASURES

Flashpoint: Not applicable.

Lower Explosion Limit (LEL): Not applicable.

Upper Explosion Limit (UEL): Not applicable.

Extinguishing Media: ABC, CO₂, Water.

Special Fire Fighting Procedures: Self-contained breathing apparatus.

Unusual Fire/Explosion Hazards: Generations of hydrogen chloride (HCl) fumes.

Hazardous Products of Combustion: Carbon Monoxide (CO) and HCl.

Continued...

Note - legal notice on page 3



Revision Date: July 30, 2018 | Date of Issue: May 15, 2017 | Version Number: 2.0

SECTION 6: ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures: Not applicable.

SECTION 7: HANDLING AND STORAGE

No special precautions needed.

Installation Temperature Range: 50-110°F (surface).

In-Service Temperature Range: -40-160°F (surface and surrounding).

Exposure to Ultraviolet Radiation/Weather Events: The amount of time between when Drago Sealant Form is installed and when concrete is placed or other complete protection from sunlight and weather events is provided should be minimized while not exceeding 7 days.

Please review the remainder of the SDS and relevant technical data sheets for storage and additional information. If any of the conditions cited above pose a problem for the typical installation of the Drago Sealant Form, please contact Stego Industries for additional information and solutions.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

No protective requirements are necessary under normal use. **Eye protection is recommended** if slicing logs into roll goods. **Local exhaust is recommended** if thermoforming material.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Since this product are not liquids, physical characteristics such as boiling point, vapor pressure, vapor density, percent volatile, evaporation rate, etc. are not applicable.

SECTION 10: STABILITY AND REACTIVITY

Material is stable.

Incompatibility: None known.

Keep away from fire.

Hazardous Decomposition Products: Thermal decomposition may produce, CO, CO₂, and HCl.

SECTION 11: TOXICOLOGICAL INFORMATION

No data available.

SECTION 12: ECOLOGICAL INFORMATION

No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

No special precautions needed.

Waste Disposal Method: Landfill (in accordance with local disposal regulations).

Continued...

Note - legal notice on page 3



DRAGO® SEALANT FORM SAFETY DATA SHEET

SDS

P3 of 3

Revision Date: July 30, 2018 | Date of Issue: May 15, 2017 | Version Number: 2.0

SECTION 14: TRANSPORT INFORMATION

No special precautions needed.

SECTION 15: REGULATORY INFORMATION

None known.

No chemical safety assessment has been carried out for these materials by the supplier.

SECTION 16: OTHER INFORMATION

Disclaimer: The information contained herein relates only to the specific material identified. Stego Technology, LLC believes that such information is accurate and reliable as of the date of this material safety data sheet, but no representation, guarantee or warranty, expressed or implied, is made as to the accuracy, reliability, or completeness of the information. Stego Technology, LLC urges persons receiving this information to make their own determination as to the information's suitability and completeness for their particular application.

Please read the product statements for all Drago® products by navigating here:
<http://www.stegoindustries.com/legal>



DRAGOTACK™ TAPE SAFETY DATA SHEET

SDS

P1 of 7

Revision Date: July 30, 2018 | Date of Issue: August 10, 2017 | Version Number: 2.0

SECTION 1: IDENTIFICATION

Product Identifier

Product Name: DragoTack Tape

Intended Use of the Product

Sealing of Drago® Wrap to foundation concrete constructions.

Company Name, Address, and Telephone of the Responsible Party

Stego Technology, LLC or C/O Stego® Industries, LLC*

216 Avenida Fabricante #101

San Clemente, CA 92672 USA

Emergency Telephone Number

Emergency Number: 1 (800) 424-9300 (24 Hrs.) CHEMTREC**Main Contact Number:** (877) 464-7834

SECTION 2: HAZARDS IDENTIFICATION

Physical Hazards: Not Classified.**Health Hazards:** Not Classified.**Environmental Hazards:** Not classified.**OSHA Defined Hazards:** Not classified.

LABEL ELEMENTS

Hazard Symbol: None.**Signal Word:** None.**Hazard Statement:** The mixture does not meet the criteria for classification.

PRECAUTIONARY STATEMENTS

Prevention: Observe good industrial hygiene practices.**Response:** Wash hands after handling.**Storage:** Store away from incompatible materials.**Disposal:** Dispose of waste and residues in accordance with local authority requirements.**Hazard(s) not otherwise classified (HNOC):** None known.**Supplemental information:** None.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Mixtures

Chemical name	CAS Number	% by WT.
Talc (powder)	14807-96-6	10 - <20 %
Titanium Dioxide	13463-67-7	1 - <3 %
Other components below reportable levels		70 - <80 %

SECTION 4: FIRST AID MEASURES

Inhalation: Move to fresh air. Call a physician if symptoms or persist.**Skin Contact:** Wash off with soap and water. Get medical attention if irritation develops and persists.**Continued...**

Note - legal notice on page 7



Revision Date: July 30, 2018 | Date of Issue: August 10, 2017 | Version Number: 2.0

SECTION 4: FIRST AID MEASURES

Eye Contact: Rinse with water. Get medical attention if irritation develops and persists.

Ingestion: Rinse mouth. Get medical attention if symptoms occur.

Most Important Symptoms/Effects, Acute and Delayed: Direct contact with eyes may cause temporary irritation.

Indication of Immediate Medical Attention and Special Treatment Needed: Treat symptomatically.

General Information: Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

SECTION 5: FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable Extinguishing Media: Do not use water jet as an extinguisher, as this will spread the fire.

Specific Hazards Arising from the Chemical: During fire, gases hazardous to health may be formed.

Special Protective Equipment and Precautions for Firefighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire-Fighting Equipment/Instructions: Use water spray to cool unopened containers.

Specific Methods: Use standard firefighting procedures and consider the hazards of other involved materials.

General Fire Hazards: No unusual fire or explosion hazards noted.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures: Keep unnecessary personnel away. For personal protection, see Section 8 of SDS.

Methods and Materials for Containment and Cleaning Up: Stop the flow of material, if this is without risk. Following product recover, flush area with water. For waste disposal, see Section 13 of SDS.

Environmental Precautions: Avoid discharge into drains, water courses or onto the ground.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling: Avoid prolonged exposure. Observe good industrial hygiene practices.

Conditions for Safe Storage, Including Any Incompatibilities: Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

Installation Temperature Range: 40-110°F (surface and ambient).

In-Service Temperature Range: -20-140°F (surface and surrounding).

Exposure to Ultraviolet Radiation/Weather Events: The amount of time between when DragoTack Tape is installed and when concrete is placed or other complete protection from sunlight and weather events is provided should be minimized while not exceeding 7 days.

Please review the remainder of the SDS and relevant technical data sheets for storage and additional information. If any of the conditions cited above pose a problem for the typical installation of the DragoTack Tape, please contact Stego Industries for additional information and solutions.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS

US OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Titanium Dioxide (CAS 13463-67-7)	PEL	15 mg/m ³	Total dust

Continued...

Note - legal notice on page 7



Revision Date: July 30, 2018 | Date of Issue: August 10, 2017 | Version Number: 2.0

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION *Continued...*

US OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
Talc (powder) [CAS 14807-96-6]	TWA	0.3 mg/m ³	Total dust
		0.1 mg/m ³	
		20 mppcf	Respirable
		2.4 mppcf	Respirable

US ACGIH Threshold Limit Values

Components	Type	Value	Form
Talc (powder) [CAS 14807-96-6]	TWA	2 mg/m ³	Respirable fraction
Titanium Dioxide [CAS 13463-67-7]	TWA	10 mg/m ³	

US NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Talc (powder) [CAS 14807-96-6]	TWA	2 mg/m ³	Respirable

Biological Limit Values: No biological exposure limits noted for the ingredient(s).

Appropriate Engineering Controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

INDIVIDUAL PROTECTION MEASURES, SUCH AS PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: Wear safety glasses with side shields (or goggles).

Hand Protection: Wear appropriate chemical resistant gloves.

Other Skin Protection: Wear suitable protective clothing.

Respiratory Protection: In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal Hazards: Wear appropriate thermal protective clothing, when necessary.

General Hygiene Considerations: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical State:	Solid
Form:	Solid roll of tape
Color:	Grey adhesive
Odor:	Slight
Odor Threshold:	Not available
pH:	Not available
Melting Point / Freezing Point:	Not available
Initial Boiling Point / Boiling Range:	Not available
Flash Point:	> 428.0°F (> 220°C)
Evaporation Rate:	Not available
Flammability (solid, gas):	Not available

Continued...

Note - legal notice on page 7



Revision Date: July 30, 2018 | Date of Issue: August 10, 2017 | Version Number: 2.0

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES *Continued...*

Upper/Lower Flammability or Explosive Limits

Flammability Limit – Lower (%):	Not available
Flammability Limit – Upper (%):	Not available
Explosive Limit – Lower (%):	Not available
Explosive Limit – Upper (%):	Not available
Vapor Pressure:	Not available
Vapor Density:	Not available
Relative Density:	Not available
Solubility in Water:	Not available
Partition Coefficient (n-octanol/water):	Not available
Auto-Ignition Temperature:	> 842°F (>450°C)
Decomposition Temperature:	Not available
Viscosity:	Not available
Density:	1.04 g/cm ³ estimated
Specific Gravity:	1.04 estimated

SECTION 10: STABILITY AND REACTIVITY

Reactivity: The product is stable and non-reactive under normal conditions of use, storage, and transport.

Chemical Stability: Material is stable under normal conditions.

Possibility of hazardous reactions: No dangerous reactions known under conditions of normal use.

Conditions to Avoid: Avoid temperatures exceeding the flash point; contact with incompatible materials.

Incompatible Materials: Strong oxidizing agents.

Hazardous Decomposition Products: No hazardous decomposition products are known.

SECTION 11: TOXICOLOGICAL INFORMATION

INFORMATION ON LIKELY ROUTES OF EXPOSURE

Ingestion: Expected to be a low ingestion hazard.

Inhalation: Prolonged inhalation may be harmful.

Skin Contact: No adverse effects due to skin contact are expected.

Eye Contact: Direct contact with eyes may cause temporary irritation.

Symptoms related to the physical, chemical and toxicological characteristics: Direct contact with eyes may cause temporary irritation.

INFORMATION ON TOXICOLOGICAL EFFECTS

Acute Toxicity: Not available.

Skin Corrosion/Irritation: Prolonged skin contact may cause temporary irritation.

Serious Eye Damage/Eye Irritation: Direct contact with eyes may cause temporary irritation.

RESPIRATORY OR SKIN SENSITIZATION

Respiratory Sensitization: Not available.

Skin Sensitization: This product is not expected to cause skin sensitization.

Germ Cell Mutagenicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Continued...

Note - legal notice on page 7



Revision Date: July 30, 2018 | Date of Issue: August 10, 2017 | Version Number: 2.0

SECTION 11: TOXICOLOGICAL INFORMATION *Continued...*

Carcinogenicity: This product is not considered to be a carcinogen by IARC, ACGIH, NTP, OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity:

Talc (powder) (CAS 14807-96-6)

2B Possibly carcinogenic to humans.

3 Not classifiable as to carcinogenicity to humans.

Titanium Dioxide (CAS 13463-67-7)

2B Possibly carcinogenic to humans

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not listed.

Reproductive Toxicity: This product is not expected to cause reproductive or developmental effects.

Specific Target Organ Toxicity – single exposure: Not classified.

Specific Target Organ Toxicity – repeated exposure: Not classified.

Aspiration Hazard: Not available.

Chronic Effects: Prolonged inhalation may be harmful.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: The product is not classified an environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Product		Species		Test Results
DragoTack Tape (CAS Mixture)				
Aquatic				
Crustacea	EC50	Daphnia		85901.6564 mg/l, 48 hours estimated
Fish	LC50	Fish		85901.6564 mg/l, 96 hours estimated
Components		Species		Test Results
Titanium Dioxide (CAS 13463-67-7)				
Aquatic				
Crustacea	EC50	Water flea (Daphnia manga)		>1000 mg/l, 48 hours
Fish	LC50	Mummichog (Fundulus heteroclitus)		>1000 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and Degradability: No data is available on the degradability of this product.

Bioaccumulative Potential: Not available.

Mobility in Soil: No data available.

Other Adverse Effects: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Collect and reclaim or dispose in sealed containers at licensed waste disposal site.

Local Disposal Regulations: Dispose in accordance with all applicable regulations.

Hazardous Waste Code: The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from Residues / Unused Products: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see; disposal instructions).

Contaminated Packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

Continued...

Note - legal notice on page 7



Revision Date: July 30, 2018 | Date of Issue: August 10, 2017 | Version Number: 2.0

SECTION 14: TRANSPORT INFORMATION

DOT: Not regulated as dangerous goods.
IATA: Not regulated as dangerous goods.
IMDG: Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable.

SECTION 15: REGULATORY INFORMATION

US Federal Regulations: All components are on the US EPA TSCA Inventory List. The product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFT 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D): Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4): Not listed

SARA 304 Emergency Release Notification: Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not listed.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA)

HAZARD CATEGORIES

Immediate Hazard: No
Delayed Hazard: No
Fire Hazard: No
Pressure Hazard: No
Reactivity Hazard: No

SARA 302 Extremely hazardous substance: Not listed.

SARA 311/312 Hazardous Chemical: No

SARA 313 (TRI reporting): Not regulated.

OTHER FEDERAL REGULATIONS

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List: Not regulated.

Clean Air Act (CAA) Section 112® Accidental Release Prevention (40 CFR 68.130): Not regulated.

Safe Drinking Water Act: Not regulated.

US STATE REGULATIONS

US Massachusetts RTK – Substance List:

Talc (powder) (CAS 148007-96-6)
Titanium Dioxide (CAS 13463-67-7)

US New Jersey Worker and Community Right-to-Know Act:

Talc (powder) (CAS 148007-96-6)
Titanium Dioxide (CAS 13463-67-7)

US Pennsylvania Worker and Community Right-to-Know Law:

Talc (powder) (CAS 148007-96-6)
Titanium Dioxide (CAS 13463-67-7)

US Rhode Island RTK: Not regulated.

US California Proposition 65: Titanium Dioxide is listed due to its respirable nature in powder form. As supplied and applied the titanium dioxide is bound within the product matrix and is not expected to be in a respirable form. **WARNING:** This product contains a chemical known to the State of California to cause cancer.

US – California Proposition 65 – CRT: Listed date/Carcinogenic substance:

Titanium Dioxide (CAS 13463-67-7) Listed September 2, 2011.

Continued...

Note - legal notice on page 7



DRAGOTACK™ TAPE SAFETY DATA SHEET

SDS

P7 of 7

Revision Date: July 30, 2018 | Date of Issue: August 10, 2017 | Version Number: 2.0

SECTION 15: REGULATORY INFORMATION *Continued...*

INTERNATIONAL INVENTORIES

Country(s) or region	Inventory name	On Inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substance List (NDSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

* A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

SECTION 16: OTHER INFORMATION

HMIS® RATINGS

Health: 0 Flammability: 0 Physical Hazard: 0

NFPA RATINGS

Health: 0 Flammability: 0 Instability: 0

Disclaimer: The information contained herein relates only to the specific material identified. Stego Technology, LLC believes that such information is accurate and reliable as of the date of this material safety data sheet, but no representation, guarantee or warranty, expressed or implied, is made as to the accuracy, reliability, or completeness of the information. Stego Technology, LLC urges persons receiving this information to make their own determination as to the information's suitability and completeness for their particular application.

Please read the product statements for all Drago® products by navigating here:
<http://www.stegoindustries.com/legal>



DRAGO® TAPE SAFETY DATA SHEET

Revision Date: July 30, 2018 | Date of Issue: June 1, 2017 | Version Number: 3.0

SECTION 1: IDENTIFICATION

Product Identifier

Product Name: Drago Tape

Intended Use of the Product

Accessory of Drago® Wrap Vapor Intrusion Barriers; used to seal penetrations and seams in Drago Wrap.

Company Name, Address, and Telephone of the Responsible Party

Stego Technology, LLC or C/O Stego® Industries, LLC*
216 Avenida Fabricante #101
San Clemente, CA 92672

Emergency Telephone Number

Emergency Number: 1 (800) 424-9300 (24 Hrs.) CHEMTREC

Main Contact Number: (877) 464-7834

SECTION 2: HAZARDS IDENTIFICATION

Classification: This product is not classified as hazardous in accordance with 29 C.F.R. § 1910.1200.

Signal word: None.

Pictogram(s): None.

Hazard statement(s): None.

Precautionary statement(s): None.

Hazards not otherwise classified: Polymer film can burn if exposed to excessive temperatures beyond the normal use of the product.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	CAS Number	% by WT.
Copper	Proprietary*	<10%*
Modified Acrylic Adhesive	Proprietary*	41-43%*
Release Coated Polymeric Film	Mixture	57-59%

The selections marked with an '*' are proprietary and considered to be Trade Secrets. This is the reason that they are listed as such, or provided as a range.

SECTION 4: FIRST AID MEASURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

Inhalation: Not a respirable film. If exposed to fumes from combustion, move subject to fresh air; if breathing is difficult, give oxygen and get medical attention; if victim has stopped breathing, give artificial respiration and get medical attention.

Eye Contact: Not a probable route of exposure. If exposed to fumes from overheating or from combustion, move subject to fresh air. Flush with plenty of water; if irritation continues, get medical attention.

Skin Contact: No treatment necessary. For thermal burns, cool molten materials with water and get medical attention.

Ingestion: Not a probable route of exposure.

Continued...

Note - legal notice on page 5



Revision Date: July 30, 2018 | Date of Issue: June 1, 2017 | Version Number: 3.0

SECTION 5: FIRE-FIGHTING MEASURES

Unusual Hazards: Polymer film can burn if exposed to excessive temperature beyond the normal use of the product.

Extinguishing Agents: Use extinguishing media appropriate for surrounding fire: carbon dioxide, foam, dry chemical, and water fog. Use fire extinguishers with class A extinguishing agents (e.g., water, foam)

Personal Protective: Equipment unnecessary unless resin is burned, which is not an intended use of the product. If resin is burning, wear self-contained breathing apparatus (pressure-demand MSHA/NIOSH approved or equivalent) and full protective gear.

Special Fire Fighting Procedures: Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

Note: See Section 10 for hazardous combustion and thermal decomposition information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Protection: None necessary.

Procedures (Clean-up Methods, Environmental Precautions): None necessary.

SECTION 7: HANDLING AND STORAGE

Storage Conditions: Cool, dry storage recommended. Indoor storage recommended.

Avoid storing films in areas containing aromatic hydrocarbons, halogenated compounds, chlorinated compounds, oxidative agents, solvents or other known polyethylene solubilizers, prodegradants, as they may impact the product performance and/or service life.

Handling Procedures: Avoid direct sunlight. Avoiding direct UV exposure of product. Avoid contact with incompatible materials.

Installation Temperature Range: 5-100°F (surface and ambient).

In-Service Temperature Range: -20-160°F (surface and surrounding).

Exposure to Ultraviolet Radiation/Weather Events: The amount of time between when Drago Tape is installed and when concrete is placed or other complete protection from sunlight and weather events is provided should be minimized while not exceeding 7 days.

Please review the remainder of the SDS and relevant technical data sheets for storage and additional information. If any of the conditions cited above pose a problem for the typical installation of the Drago Tape, please contact Stego Industries for additional information and solutions.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Ingredient	OSHA PEL	ACGIH TWA
Copper	0.1 mg/m ³ (Cu fume)	0.2 mg/m ³ (Cu fume)

Respiratory Protection: None required during handling. Local exhaust to remove fumes from heat sealing and hot wire cutting areas of packaging or bag converting for worker comfort.

Eye/Face Protection: None necessary under normal use.

Hand/Skin Protection : None necessary under normal use.

Engineering Controls (Ventilation): Use local exhaust ventilation when routinely heat sealing this product. Recommended ventilation is with a minimum capture velocity of 100 ft/min. (30 m/min.) at the point of vapor evolution. Refer to the current edition of *Industrial Ventilation: A Manual of Recommended Practice* published by the American Conference of Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.

Other Protective Equipment: None necessary under normal use.

Continued...

Note - legal notice on page 5



Revision Date: July 30, 2018 | Date of Issue: June 1, 2017 | Version Number: 3.0

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES *Continued...*

General Physical Form: Modified acrylic adhesive adhesive coated onto a modified polyolefin film.

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Single-sided tape
Color	Copper and Gray
State	Solid
Odor Characteristics	None
Odor Threshold	None
pH	Not Applicable
Melting Point/Freezing Point	Not Applicable
Initial Boiling Point and Boiling Point Range	Not Applicable
Flash Point	Not Applicable
Evaporation Rate	Not Applicable
Flammability (solid, gas)	Not Applicable
Upper flammability	Not Applicable
Lower Flammability	Not Applicable
Vapor Pressure	Not Applicable
Vapor Density	Not Applicable
Relative Density	Not Applicable
Solubility in water	Not Applicable
Partition Coefficient: n-octanol/water	Not Applicable
Auto ignition-temperature	Not Applicable
Decomposition temperature	>325°C (617°F)
Viscosity	Not Applicable
Volatile Organic Compounds	No Data Available
Percent Volatile	Not Applicable
VOC less H2O and Exempt Solvents	No Data Available

SECTION 10: STABILITY AND REACTIVITY

Instability: This material is considered stable. However, temperatures above 350°C, is the onset of polymer decomposition. Thermal decomposition is dependent on time and temperature.

Hazardous Decomposition Products

Substance	Condition
Hydrocarbons	Combustion by-product
Carbon Monoxide	Combustion by-product
Carbon Dioxide	Combustion by-product
Copper Fume	Combustion by-product

Hazardous Polymerization: Product will not undergo hazardous polymerization. Product does not decompose at ambient temperatures.

Incompatibility: Lead azide and lead stiphante commonly used in high explosive detonators react violently with copper.

Reactivity: Reacts and binds with polar gases such as Hydrogen sulfide (H₂S), Ozone (O₃), Carbonyl sulfide (COS), Sulfur Dioxide (SO₂), Hydrogen chloride (HCl), Formic Acid, Acetic Acid.

Hazardous Decomposition: Under recommended usage conditions, hazardous decomposition products are not expected. Hazardous decomposition products may occur as a result of oxidation, heating, or reaction with another material.

Continued...

Note - legal notice on page 5



Revision Date: July 30, 2018 | Date of Issue: June 1, 2017 | Version Number: 3.0

SECTION 11: TOXICOLOGICAL INFORMATION

This product, when used under reasonable conditions and in accordance with the directions for use, should not present a health hazard. However, use or processing of the product in a manner not in accordance with the product's directions for use may affect the performance of the product and may present potential health and safety hazards.

Acute Data: No Toxicity data are available for this material.

PRIMARY ROUTES OF EXPOSURE

Skin Contact: Only if burned.

Eye Contact: Only if burned.

Respiratory Contact: Only if burned.

ACUTE EFFECTS OF EXPOSURE

Ingestion: Not a probable route of exposure.

Inhalation: No inhalation risk unless product is heated to point of burning, which in normal applications does not occur. Fumes from combustion are unlikely to be produced during heat shrinking. Local ventilation should be used for comfort. Testing data shows copper/polymer particulate count at approximately 0.007mg/m³, which is well below OSHA PEL of 0.1 mg/m³.

Eye Contact: No eye exposure risk during all product usage except during heating if plastic is heated to point of combustion, which does not occur during the intended use of the product. Fumes from combustion, which have a low toxicity, may be produced during hot wire cutting or heat sealing. Fumes are unlikely to be produced during heat shrinking when used as directed.

Skin Contact: Not irritating when used as directed. Hot polymer created during heat shrinking, wire cutting, or heat sealing, may produce thermal burns.

Chronic Effects of Exposure: None known when used as directed.

Carcinogenicity: None known when used as directed.

SECTION 12: ECOLOGICAL INFORMATION

This material is insoluble in water and not expected to present any environmental problems in normal application, however areas containing aromatic hydrocarbons, halogenated compounds, chlorinated compounds, pH extremities, oxidative agents, solvents or other known polyethylene solubilizers, prodegradants, etc. may impact the product performance and/or service life.

SECTION 13: DISPOSAL CONSIDERATIONS

Procedure: Reclaim if feasible. If product can't be reclaimed, no special requirements are necessary; dispose of as ordinary solid waste. Pick up film for good "housekeeping" and to prevent a slipping hazard. Incineration or landfill in compliance with federal, state and local regulations. *Since regulations vary, consult applicable regulations or authorities before disposal.*

SECTION 14: TRANSPORT INFORMATION

US DOT Hazard Class: Not regulated.

Continued...

Note - legal notice on page 5



Revision Date: July 30, 2018 | Date of Issue: June 1, 2017 | Version Number: 3.0

SECTION 15: REGULATORY INFORMATION

Workplace Classification: This product is not considered hazardous under the OSHA Hazard Communication Standard (29 C.F.R. § 1910.1200).

CERCLA Information (40 C.F.R. 302.4): Because of the form in which copper is contained within the resin, releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Waste Classification: When this product becomes a waste, it is classified as a non-hazardous waste under criteria of the Resource Conservation and Recovery Act (40 C.F.R. 261).

SECTION 16: OTHER INFORMATION

NFPA HAZARD RATING

Health: 0 | Flammability: 1 | Reactivity: 0 | Special Hazards: None

Scale: 4 = Extreme | 3 = High | 2 = Moderate | 1 = Slight | 0 = Insignificant

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material, but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

Rating are based on internal supplier's guidelines, and they are intended for internal use only.

ABBREVIATIONS:

ACGIH = American Conference of Governmental Industrial Hygienists

OSHA = Occupational Safety and Health Administration

TLV = Threshold Limit Value

PEL = Permissible Exposure Limit

TWA = Time Weighted Average

STEL = Short-Term Exposure Limit

Disclaimer: The information contained herein relates only to the specific material identified. Stego Technology, LLC believes that such information is accurate and reliable as of the date of this material safety data sheet, but no representation, guarantee or warranty, expressed or implied, is made as to the accuracy, reliability, or completeness of the information. Stego Technology, LLC urges persons receiving this information to make their own determination as to the information's suitability and completeness for their particular application.

Please read the product statements for all Drago® products by navigating here:
<http://www.stegoindustries.com/legal>



DRAGO® WRAP LIMITED WARRANTY

ISSUER: STEGO TECHNOLOGY, LLC ("Stego Tech")



Applicable Date: January 1, 2018 | Revision Date: October 30, 2018 | Version Number: 2.0

P1 of 3

This Drago Wrap Limited Warranty ("the Warranty") commences on the Effective Date and applies to Drago Wrap Vapor Intrusion Barrier (for the purposes of this Warranty "Drago Wrap").

Stego Tech recommends installation of Drago Wrap per ASTM E1643, its published installation instructions, and in accordance with all site-specific recommendations of the project's design team. Drago Wrap is specifically engineered to be installed in conjunction with its proprietary accessories, including Drago® Tape, DragoTack™ Tape, Drago® Sealant, and Drago® Sealant Form. Additionally, to avoid puncturing Drago Wrap and comply with ASTM E1643, Stego Tech recommends utilizing the Beast® Screed system of vapor barrier-safe accessories.

WARRANTY TERMS AND CONDITIONS

1 DRAGO WRAP WARRANTY

Stego Tech recognizes the most current version of ASTM E1745 (at the time of the material purchase) as the governing standard specification for under-slab vapor retarders. Subject to the limitations set forth below, for the Life of the Building™ Stego Tech warrants that Drago Wrap:

- (a) meets all of the requirements for its designated ASTM E1745 classification;
- (b) has been tested in accordance with each of the following ASTM test methods:
 - i. ASTM E1745 – *Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs*
 - ii. ASTM F1249 – *Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor*
 - iii. ASTM D1709 – *Test Methods for Impact Resistance of Plastic Film by Free-Falling Dart Method*
 - iv. ASTM D882 – *Test Method for Tensile Properties of Thin Plastic Sheeting*
 - v. ASTM E154 – *Sections 8, 11, 12, 13 – Permeance After Conditioning*¹
 - vi. ASTM D1434 – *Standard Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting*
 - vii. ASTM D4833 – *Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products*
- (c) will be free from Manufacturing Composition Defects;
- (d) eligible for input on project-specific installation best practices by a Stego Tech-authorized representative during the preconstruction phase upon reasonable notice, in-person or remotely; and
- (e) eligible for Site Review by a Stego Tech-authorized representative, in-person or digitally, for input on installation prior to concrete placement upon reasonable notice.
- (f) will meet or exceed its published product literature for **a period not less than two (2) years from the Date of Installation.**

This Warranty is the sole Warranty given by Stego Tech or its Affiliates as to Drago Wrap. All installations or uses of Drago Wrap automatically activate this Warranty. If you do not wish to be bound by the terms of this Warranty, please return the Drago Wrap for a full Refund. Otherwise, all installations will be presumed to have agreed to the terms herein.

2 NOTICE AND CLAIMS

Any Claim pursuant to this Warranty must be Certified and must be made within sixty (60) days of the date discovered or the date it should reasonably have been discovered in order for Stego Tech to evaluate the Claim and replace the Drago Wrap. Claims may be made at any time during the Life of the Building. Such replacement (or at Stego Tech's option, Refund of the verified purchase price) shall be your sole and exclusive remedy for any such Claim.

¹ Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.



DRAGO® WRAP LIMITED WARRANTY

ISSUER: STEGO TECHNOLOGY, LLC ("Stego Tech")



Applicable Date: January 1, 2018 | Revision Date: October 30, 2018 | Version Number: 2.0

P2 of 3

3 WARRANTY AND CONDITIONS TO COVERAGE

This Warranty excludes any defect or damage caused by: (a) faulty or improper installation of the Drago Wrap, including the failure to comply with published specification and installation recommendations in effect at the time of installation; (b) improper use, storage or site conditions (e.g noncompliance with the terms of the Drago Wrap Material Safety Data Sheet); (c) any below-concrete slab or similar activity, and any other maintenance, repair, alteration or new installation to the Building that occurs after the completion of the original installation that impacts the Drago Wrap; (d) damage caused by non-Stego Tech materials; (e) factors beyond the reasonable control of Stego Tech or its Affiliates, including, but not limited to, natural disasters such as lightning, floods, windstorms, seismic disturbances, hurricanes, tornadoes, or impact of foreign objects or other violent storms or casualty; (f) damage resulting from any form of misuse, abuse or negligence; (g) structural defects or failures in the Building to which the Drago Wrap is installed.

Your sole remedy under this Warranty is, at Stego Tech's option: (a) Refund of the purchase price paid; or (b) replacement of so much of the Drago Wrap as Stego Tech deems necessary.

4 WARRANTY EXCLUSIONS

Except where prohibited by law, this Warranty and the remedies expressly stated herein are the exclusive warranties and remedies provided to you with respect to the Drago Wrap and supersede any prior, contrary or additional representations, whether oral or written. No representative, distributor, dealer or any other person is authorized to make, or makes any warranty, representation, condition or promise with respect to the Drago Wrap. **ALL OTHER WARRANTIES ARE DISCLAIMED AND EXCLUDED – WHETHER EXPRESS, IMPLIED, OR STATUTORY – INCLUDING ANY WARRANTY OF MERCHANTABILITY, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE.**

In no event shall Stego Tech or its Affiliates be liable for any incidental, special, indirect, consequential damages, including but not limited to lost income or loss of use. This exclusion applies regardless of whether such damages are sought for breach of warranty, breach of contract, negligence, or strict liability in tort or any other legal or equitable theory.

5 SEVERANCE

If any provision in this Warranty is found to be invalid or unenforceable, then the remainder shall have full force and effect, and the invalid provision shall be modified or partially enforced to the maximum extent permitted by law to effectuate the purpose of the Warranty.

6 DISPUTE RESOLUTION

It is the intention of the parties to use their reasonable best efforts to informally resolve, where possible, any dispute, claim, demand or controversy arising out of the performance of this Warranty by mutual negotiation and cooperation. In the event that the parties are unable to informally resolve a dispute, the Parties agree that such disputes shall be completely and finally settled by submission to arbitration before a single arbitrator under the Judicial Arbitration and Mediation Services (JAMS) Arbitration Rules then in effect. Good faith mediation shall be a condition precedent to initiating arbitration. Unless the parties agree otherwise, the arbitration shall take place in Orange County, California, U.S.A. The award of the arbitrator shall be in writing, shall be final and binding upon the parties, shall not be appealed from or contested in any court and may, in appropriate circumstances, include injunctive relief. Judgment on such award may be entered in any court of appropriate jurisdiction, or application may be made to that court for a judicial acceptance of the award and an order of enforcement, as the party seeking to enforce that award may elect. The prevailing party shall be entitled to recover its attorney fees and costs. This Agreement shall be governed in all respects by the laws of the State of California without regard to the conflict of law provisions thereof. Neither party will consolidate, or seek class treatment for any action unless previously agreed to in writing by all parties.

Continued...

Note - legal notice on last page.



DRAGO® WRAP LIMITED WARRANTY

ISSUER: STEGO TECHNOLOGY, LLC ("Stego Tech")



Applicable Date: January 1, 2018 | Revision Date: October 30, 2018 | Version Number: 2.0

P3 of 3

DEFINITIONS

"Affiliates" means Stego Tech affiliated entities, partners, joint venturers, suppliers, vendors, subcontractors, representatives, and agents.

"Applicable Date" means the Limited Warranty applies to material sold on or after January 1, 2018.

"Building" means the building above which Drago Wrap was installed, as verified by Stego Tech.

"Certified" means that you have investigated whether a breach of this Warranty occurred and obtained and provided a qualified inspector report confirming evidence exists of such a Defect. Stego Tech reserves the right to independently verify any Claims.

"Claim" means a claim for relief under the Warranty.

"Date of Installation" means the date Drago Wrap was installed, as verified by Stego Tech.

"Effective Date" means date of first sale as verified.

"Life of the Building" means the duration of which the building originally installed atop of the Drago Wrap is in good and working condition.

"Manufacturing Composition Defect" means any condition of the Drago Wrap that does not meet the material's intended design and is disclosed to Stego Tech during the Life of the Building.

"Refund" means Stego Tech providing a monetary return in the amount verified to be the cost of the Drago Wrap subject to the Claim.

"Site Review" means a review of representative portions of the Drago Wrap installation (digitally or in-person, when possible, and as determined by Stego Tech authorized representative) prior to concrete placement to help ensure compliance with governing installation standard, ASTM E1643, Stego Tech's installation instructions, and/or, if applicable, the design team's recommendations (e.g. contract documents). Site Reviews are not a full site inspection.

"Stego Tech" means Stego Technology, LLC, a California limited liability company with its principal place of business located at 216 Avenida Fabricante, #101, San Clemente, California 92672. Stego Industries, LLC is the exclusive representative of Drago Wrap and accessory products, owned by Stego Technology, LLC, a wholly independent company.

"Warranty" means this Drago Wrap Limited Warranty.

